

Graduate Public Economics

Introduction and Road Map

Emmanuel Saez

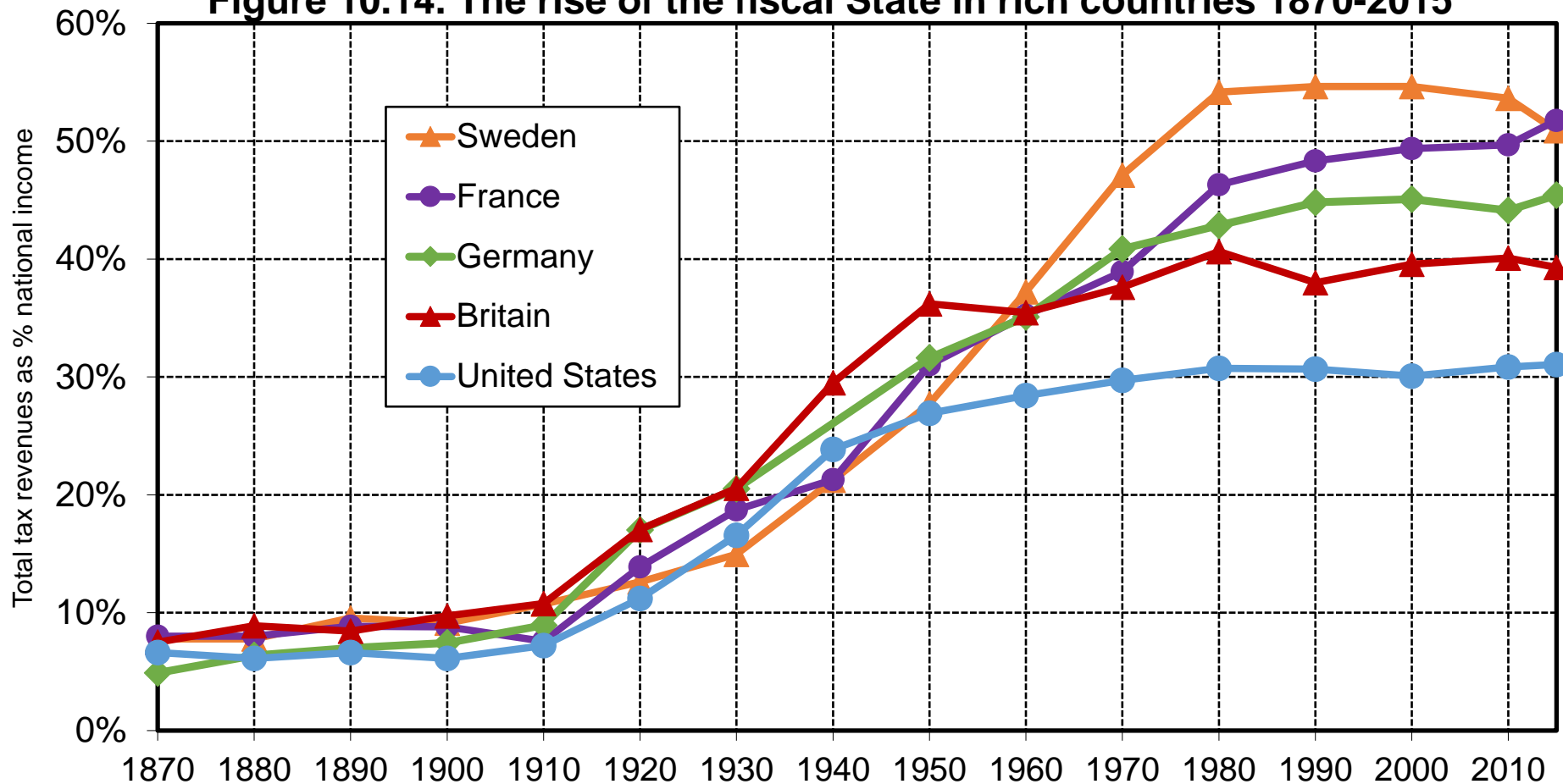
PUBLIC ECONOMICS DEFINITION

Public economics = Study of the role of the government in the economy

Government is instrumental in most aspects of economic life:

- 1) Government in charge of huge regulatory structure
- 2) Taxes: governments in advanced economies collect 30-50% of National Income in taxes
- 3) Expenditures: tax revenue funds traditional **public goods** (infrastructure, public order and safety, defense), and **social state** (education, retirement benefits, health care, income support)
- 4) Macro-economic stabilization through central bank (interest rate, inflation control), fiscal stimulus, bailout policies

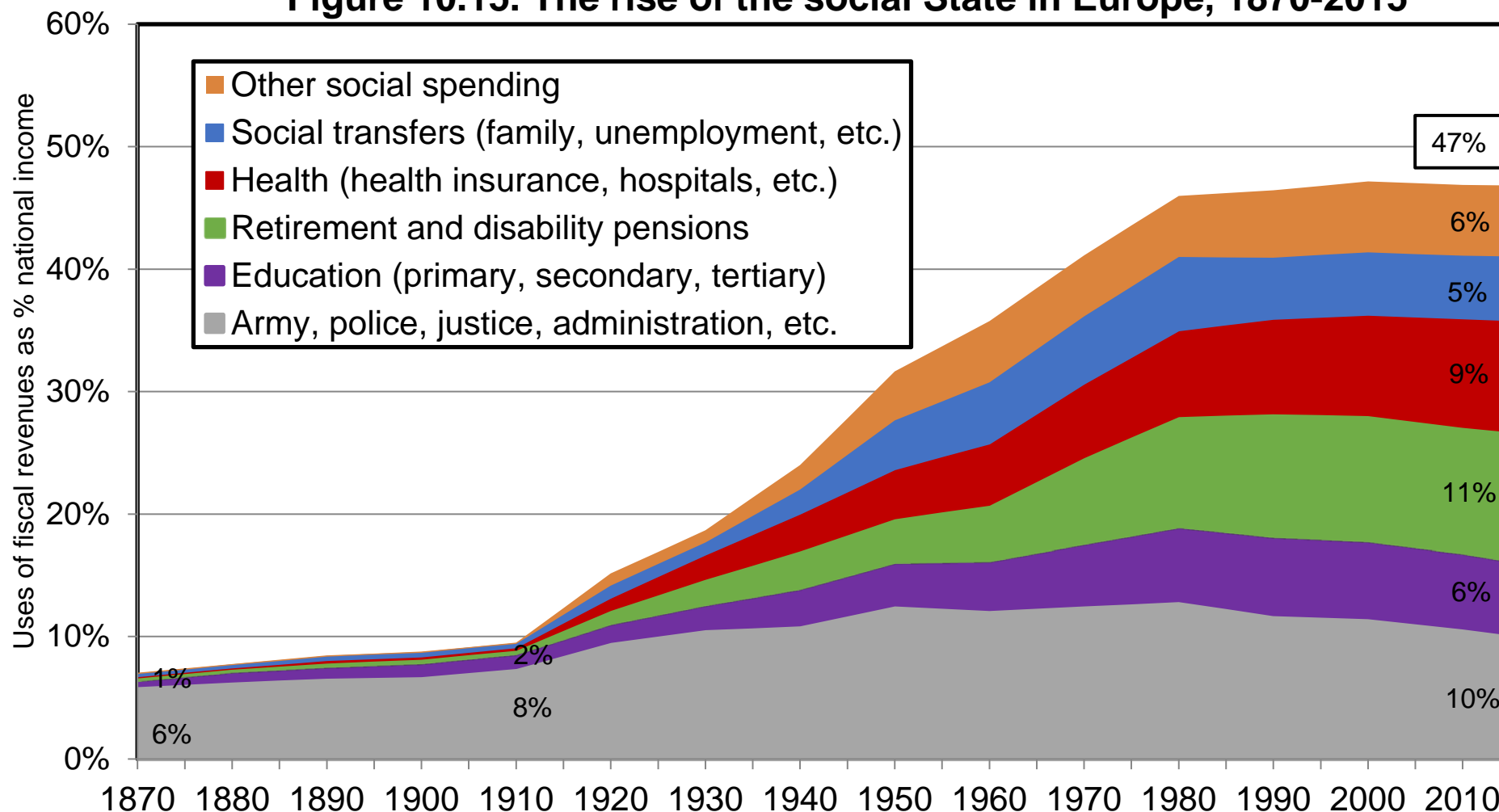
Figure 10.14. The rise of the fiscal State in rich countries 1870-2015



Interpretation. Total fiscal revenues (all taxes and social contributions included) made less than 10% of national income in rich countries during the 19th century and until World War 1, before rising strongly from the 1910s-1920s until the 1970s-1980s and then stabilizing at different levels across countries: around 30% in the U.S., 40% in Britain and 45%-55% in Germany, France and Sweden.

Sources and series: see piketty.pse.ens.fr/ideology.

Figure 10.15. The rise of the social State in Europe, 1870-2015



Interpretation. In 2015, fiscal revenues represented 47% of national income on average in Western Europe et were used as follows: 10% of national income for regalian expenditure (army, police, justice, general administration, basic infrastructure: roads, etc.); 6% for education; 11% for pensions; 9% for health; 5% for social transfers (other than pensions); 6% for other social spending (housing, etc.). Before 1914, regalian expenditure absorbed almost all fiscal revenues. **Note.** The evolution depicted here is the average of Germany, France, Britain and Sweden (see figure 10.14). Sources and séries: see piketty.pse.ens.fr/ideology.

Bigger view on government (Saez 2021)

Economists have a narrow minded view of individual behavior: selfish and rational individuals interacting through markets

But social interactions critical for humans: we cooperate at many levels: families, workplaces, communities, nation states; Beyond subsistence, value of income is largely relative

Governments are a formal way to organize cooperation

Archaic human societies depended on social cooperation for protection and taking care of the young, sick, and old

⇒ Explains best why our modern nation states provide defense and education, health care, and retirement benefits

Replacing social institutions by markets does not always work

E.g., Retirement benefits: Saving for your own retirement is economically rational but in practice most people unable to do so unless institutions (employers/government) help them

For Economists:
Two General Rules for Government Intervention

- 1) Failure of 1st Welfare Theorem: Government intervention can help if there are market or individual failures

- 2) Fallacy of the 2nd Welfare Theorem: Distortionary Government intervention is required to reduce economic inequality

Role 1: 1st Welfare Theorem Failure

1st Welfare Theorem: If (1) no externalities, (2) perfect competition, (3) perfect information, (4) agents are rational, then private market equilibrium is Pareto efficient

Government intervention may be desirable if:

- 1) Externalities require government interventions (Pigouvian taxes/subsidies, public good provision)
- 2) Imperfect competition requires regulation (typically studied in Industrial Organization)
- 3) Imperfect or Asymmetric Information (e.g., adverse selection may call for mandatory insurance)
- 4) Agents are not rational (= **individual failures** analyzed in behavioral economics, field in huge expansion): e.g., myopic or hyperbolic agents may not save enough for retirement

Role 2: 2nd Welfare Theorem Fallacy

Even with no market failures, free market might generate substantial inequality. Inequality is an issue because humans are social beings: people care about their relative situation.

2nd Welfare Theorem: Any Pareto Efficient outcome can be reached by (1) Suitable redistribution of initial endowments [individualized **lump-sum** taxes based on indiv. characteristics and not behavior], (2) Then letting markets work freely

⇒ No conflict between efficiency and equity [1st best taxation]

Redistribution of initial endowments is not feasible (information pb) ⇒ govt needs to use **distortionary** taxes and transfers
⇒ Trade-off between efficiency and equity [2nd best taxation]

This class will focus primarily but not exclusively on role 2

Illustration of 2nd Welfare Theorem Fallacy

Suppose economy is populated 50% with disabled people unable to work (hence they earn \$0) and 50% with able people who can work and earn \$100

Free market outcome: disabled have \$0, able have \$100

2nd welfare theorem: govt is able to tell apart the disabled from the able [even if the able do not work]

⇒ can tax the able by \$50 [regardless of whether they work or not] to give \$50 to each disabled person ⇒ the able keep working [otherwise they'd have zero income and still have to pay \$50]

Real world: govt can't tell apart disabled from non working able

⇒ \$50 tax on workers + \$50 transfer on non workers destroys all incentives to work ⇒ govt can no longer do full redistribution ⇒ Trade-off between equity and size of the pie

Normative vs. Positive Public Economics

Normative Public Economics: Analysis of How Things Should be (e.g., should the government intervene in health insurance market? how high should taxes be?, etc.)

Positive Public Economics: Analysis of How Things Really Are (e.g., Does govt provided health care crowd out private health care insurance? Do higher taxes reduce labor supply?)

Positive Public Economics is a required 1st step before we can complete Normative Public Economics

Positive analysis is primarily empirical and Normative analysis is primarily theoretical

Positive Public Economics overlaps with Labor Economics

Political Economy is a positive analysis of govt outcomes [public choice is political economy from a libertarian view]

Individual Failures vs. Paternalism

In many situations, individuals may not or do not seem to act in their best interests [e.g., many individuals are not able to save for retirement]

Two Polar Views on such situations:

1) Individual Failures [Behavioral Economics View] Individuals do not behave as in standard model: Self-control problems, Cognitive limitations, Social behavior

2) Paternalism [Libertarian Chicago View] Individual failures do not exist and govt wants to impose on individuals its own preferences against individuals' will

Key way to distinguish those 2 views: Under Paternalism, individuals should be opposed to govt programs such as Social Security. If individuals understand they have failures, they will tend to support govt programs such as Social Security.

Plan for 230B Lectures

1) Labor Income Taxation and Redistribution (SAEZ):

- (a) Normative Aspects: Optimal Income Taxes and Transfers,
- (b) Empirical Aspects: Labor Supply and Taxes and Transfers,
- (c) Social security retirement and disability benefits

2) Wealth inequality and taxing capital income (ZUC-MAN): (a) Wealth inequality, (b) Taxation of capital income,

- (c) International tax and tax enforcement issues

Income Inequality: Labor vs. Capital Income

Individuals derive market income (before tax) from **labor** and **capital**: $z = wl + rk$ where w is wage, l is labor supply, k is wealth, r is rate of return on wealth

1) **Labor income inequality** is due to differences in working abilities (education, talent, physical ability, etc.), work effort (hours of work, effort on the job, etc.), and luck (labor effort might succeed or not)

2) **Capital income inequality** is due to differences in wealth k (due to past saving behavior and inheritances received), and in rates of return r (varies dramatically overtime and across assets)

Entrepreneurs start with labor which then transmutes into wealth (e.g., Zuckerberg with Facebook)

Macro-aggregates: Labor vs. Capital Income

National Income = GDP - depreciation of K + net foreign income

Labor income $wl \simeq 70\text{-}75\%$ of national income z

Capital income $rk \simeq 25\text{-}30\%$ of national income z (has increased in recent decades)

Wealth stock $k \simeq 500\%$ of national income z (and increasing).
Wealth comes from past savings and price effects.

Rate of return on capital $r \simeq 6\%$

$\alpha = \beta \cdot r$ where $\alpha = rk/z$ share of capital income and $\beta = k/z$ wealth to income ratio

In GDP, gross capital share is higher (35-40%) because it includes depreciation of capital ($\simeq 10\%$ of GDP)

Income Inequality: Labor vs. Capital Income

Capital Income (or wealth) is more concentrated than Labor Income. In the US:

Top 1% wealth holders have 40% of total private wealth (Saez-Zucman 2016). Bottom 50% wealth holders hold almost no wealth.

Top 1% incomes earn about 20% of total national income on a pre-tax basis (Piketty-Saez-Zucman, 2018)

Top 1% labor income earners have about 15% of total labor income

Income Inequality Measurement

Inequality can be measured by indexes such as Gini, log-variance, quantile income shares which are functions of the income distribution $F(z)$

Gini = 2 * area between 45 degree line and Lorenz curve

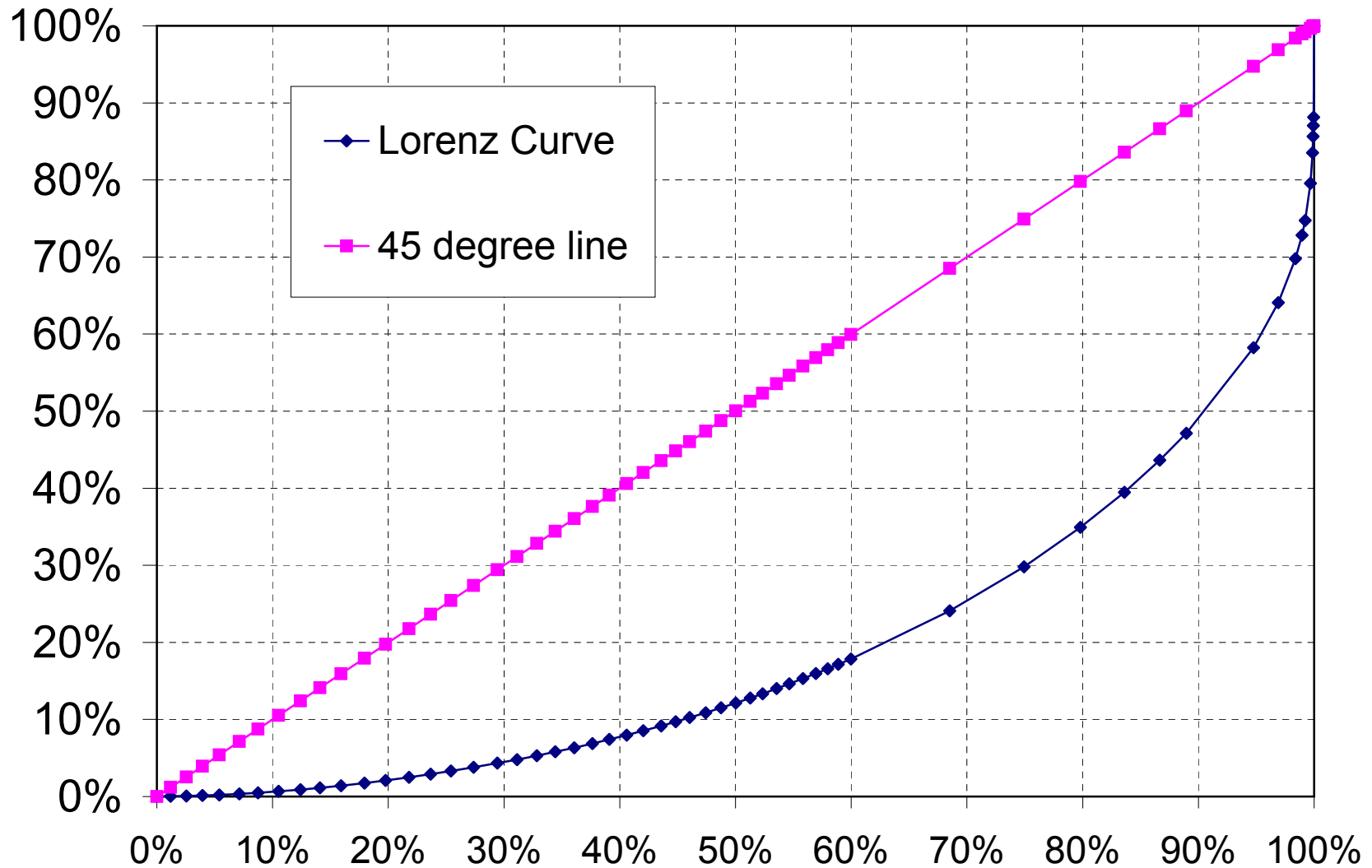
Lorenz curve $L(p)$ at percentile p is fraction of total income earned by individuals below percentile p

$$0 \leq L(p) \leq p$$

Gini=0 means perfect equality

Gini=1 means complete inequality (top person has all the income)

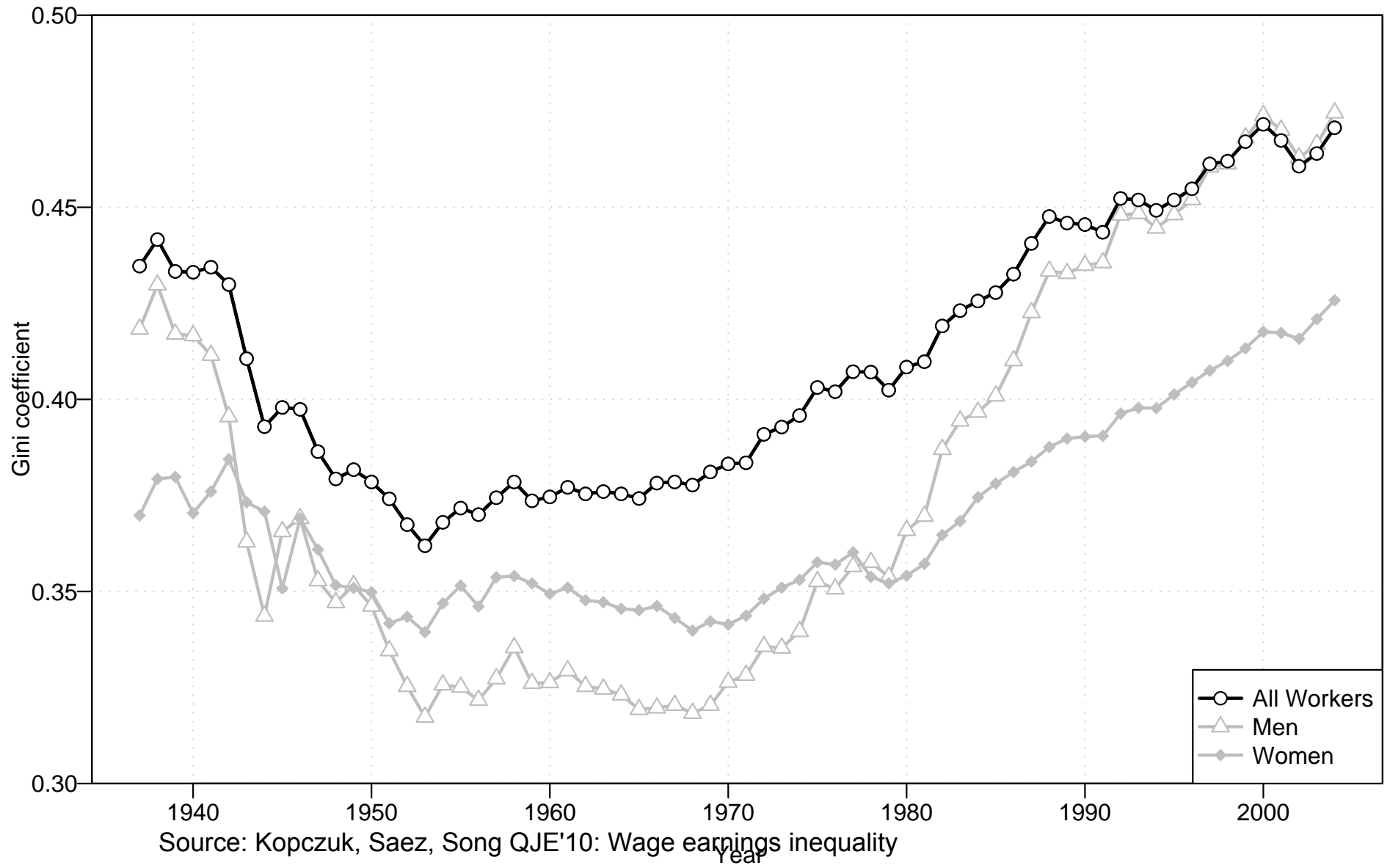
Gini Coefficient California pre-tax income, 2000, Gini=62.1%



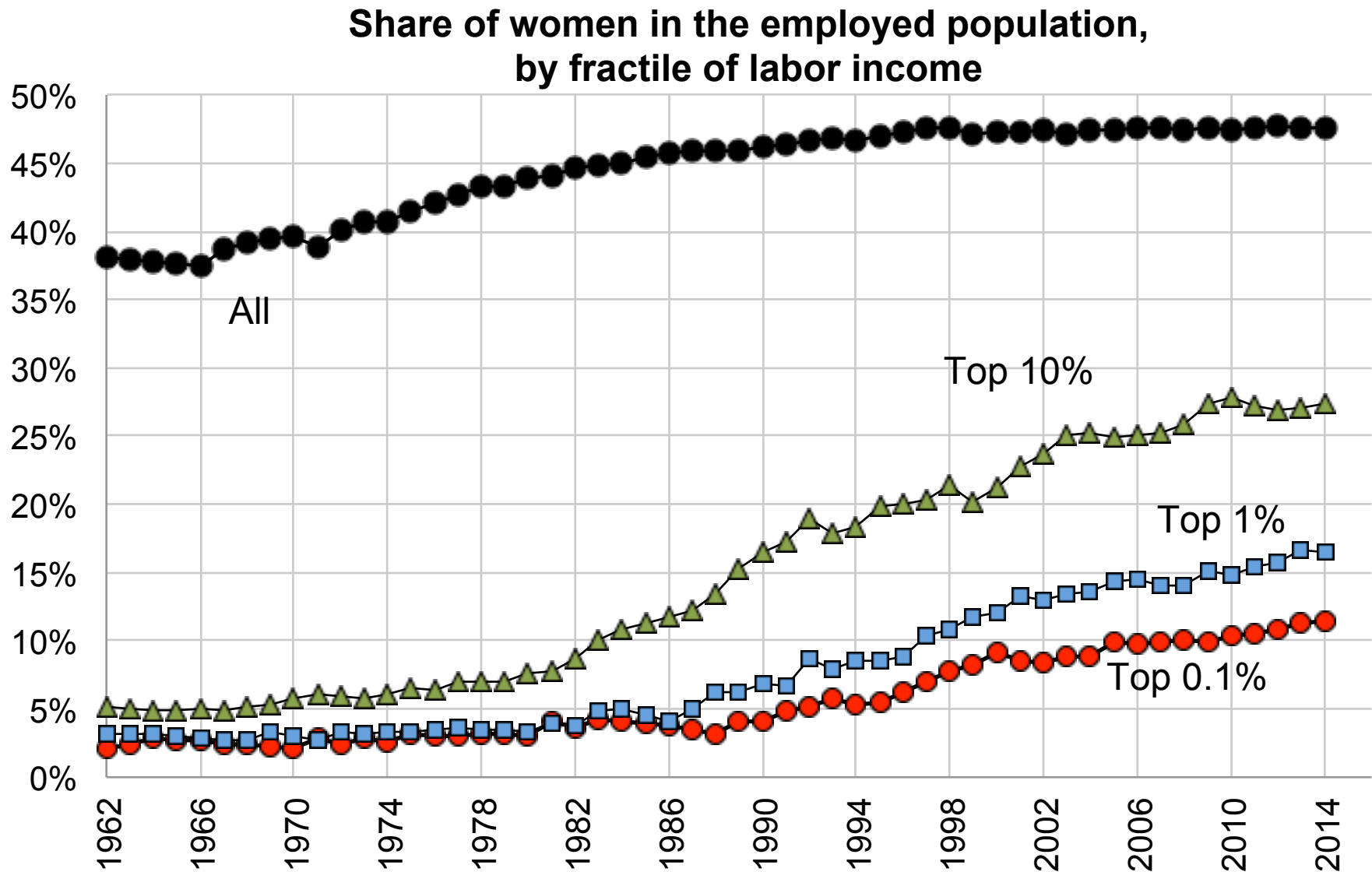
Key Empirical Facts on Income/Wealth Inequality

- 1) In the US, labor income inequality has increased substantially since 1970: due to skilled biased technological progress vs. institutions (min wage and Unions) [Autor-Katz'99]
- 2) US top income shares dropped dramatically from 1929 to 1950 and increased dramatically since 1980. Bottom 50% incomes have stagnated in real terms since 1980 [Piketty-Saez-Zucman '18 distribute full National Income]
- 3) Fall in top income shares from 1900-1950 happened in most OECD countries. Surge in top income shares has happened primarily in English speaking countries, and not as much in Continental Europe and Japan [Atkinson, Piketty, Saez JEL'11]

Figure 1: Gini coefficient

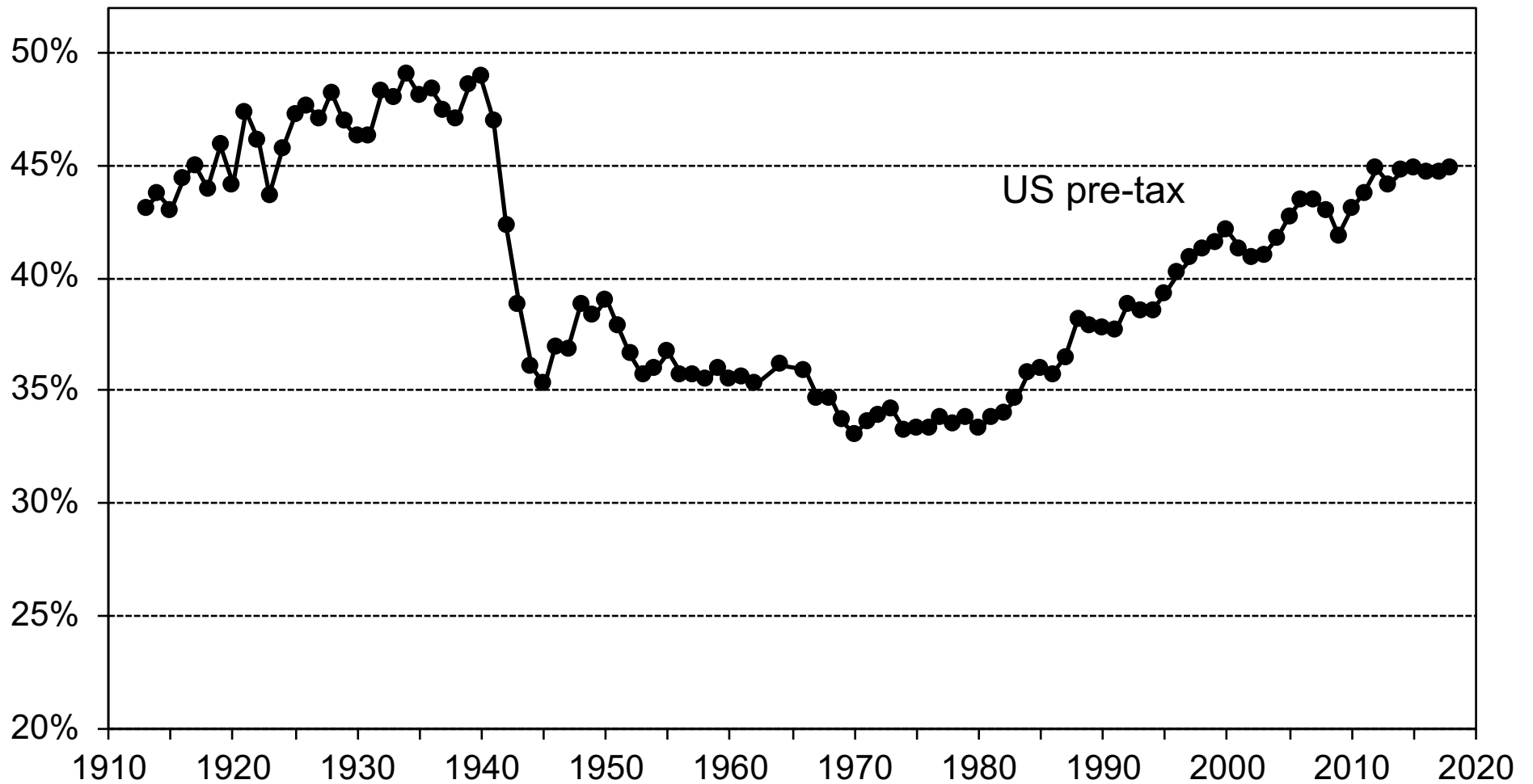


Men still make 85% of the top 1% of the labor income distribution



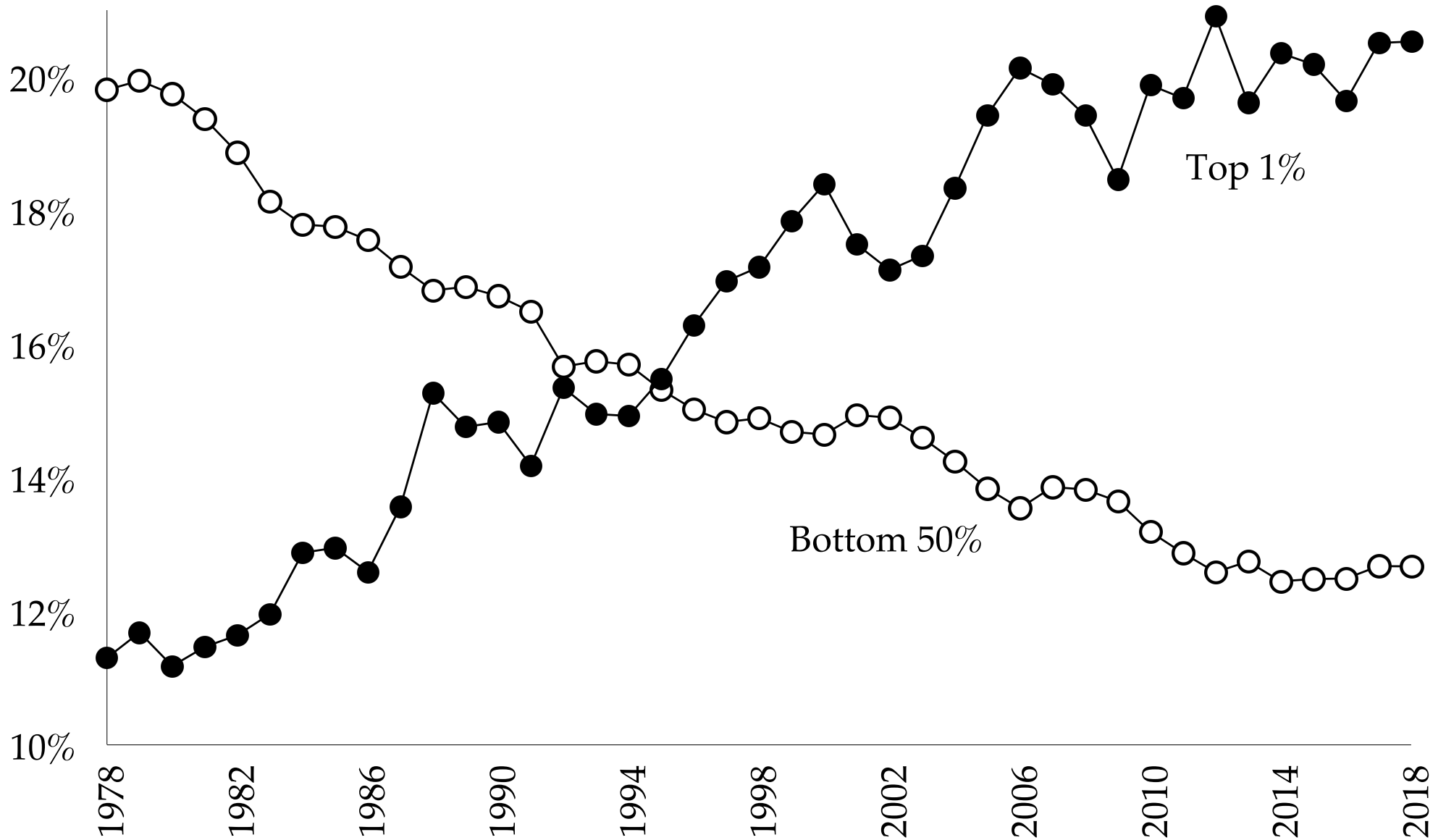
Source: Appendix Table II-F1.

Top 10% Pre-tax Income Share in the US, 1913-2018



Top income shares of pretax national income among adults aged 20+ (income within couples equally split).
Source is World Inequality Database wid.world (from Piketty, Saez, Zucman 2018).

Share of pre-tax national income



Measuring Intergenerational Income Mobility

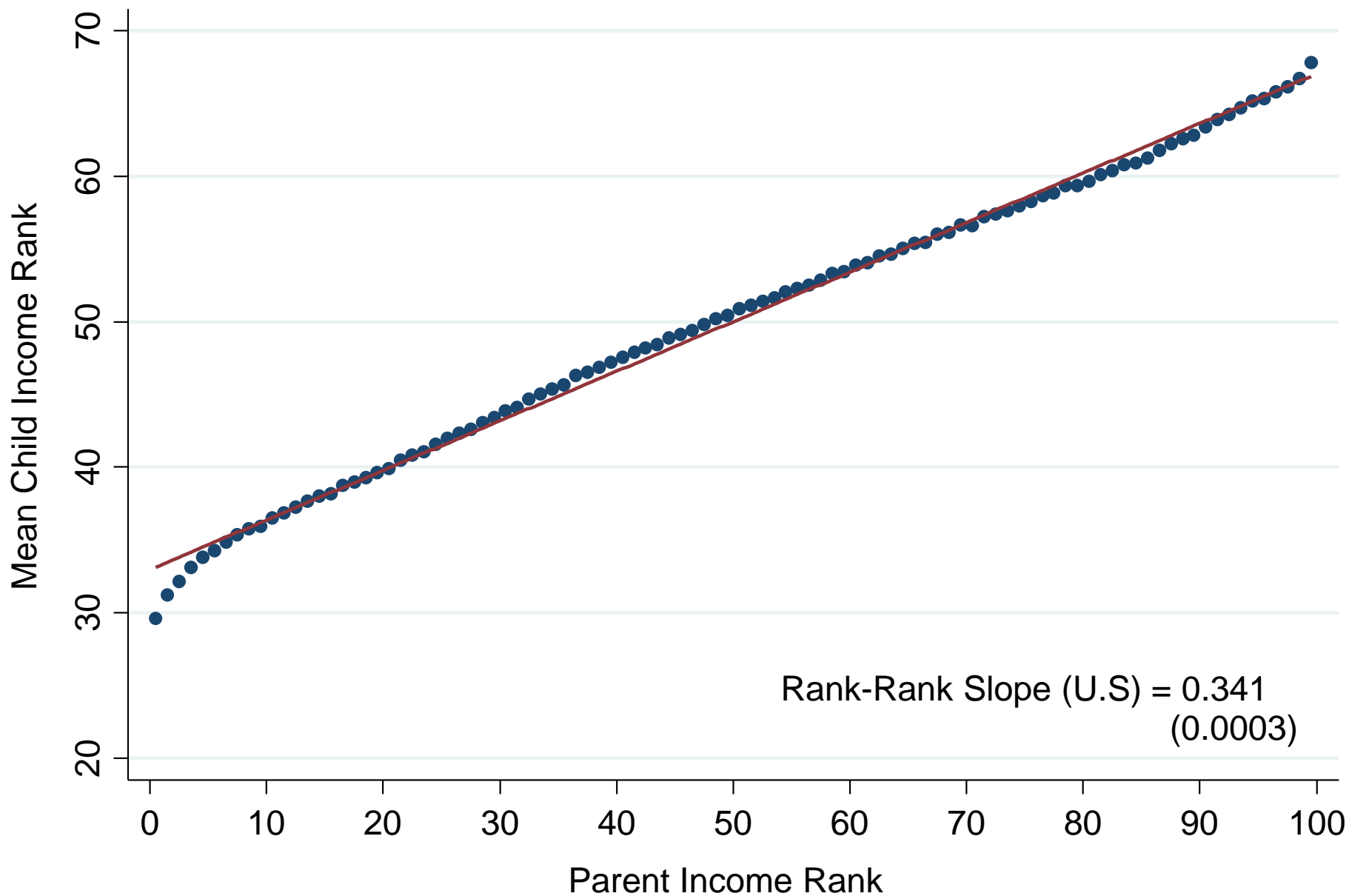
Strong consensus that children's success should not depend too much on parental income [Equality of Opportunity]

Studies linking adult children to their parents can measure link between children and parents income

Simple measure: average income rank of children by income rank of parents [Chetty et al. 2014]

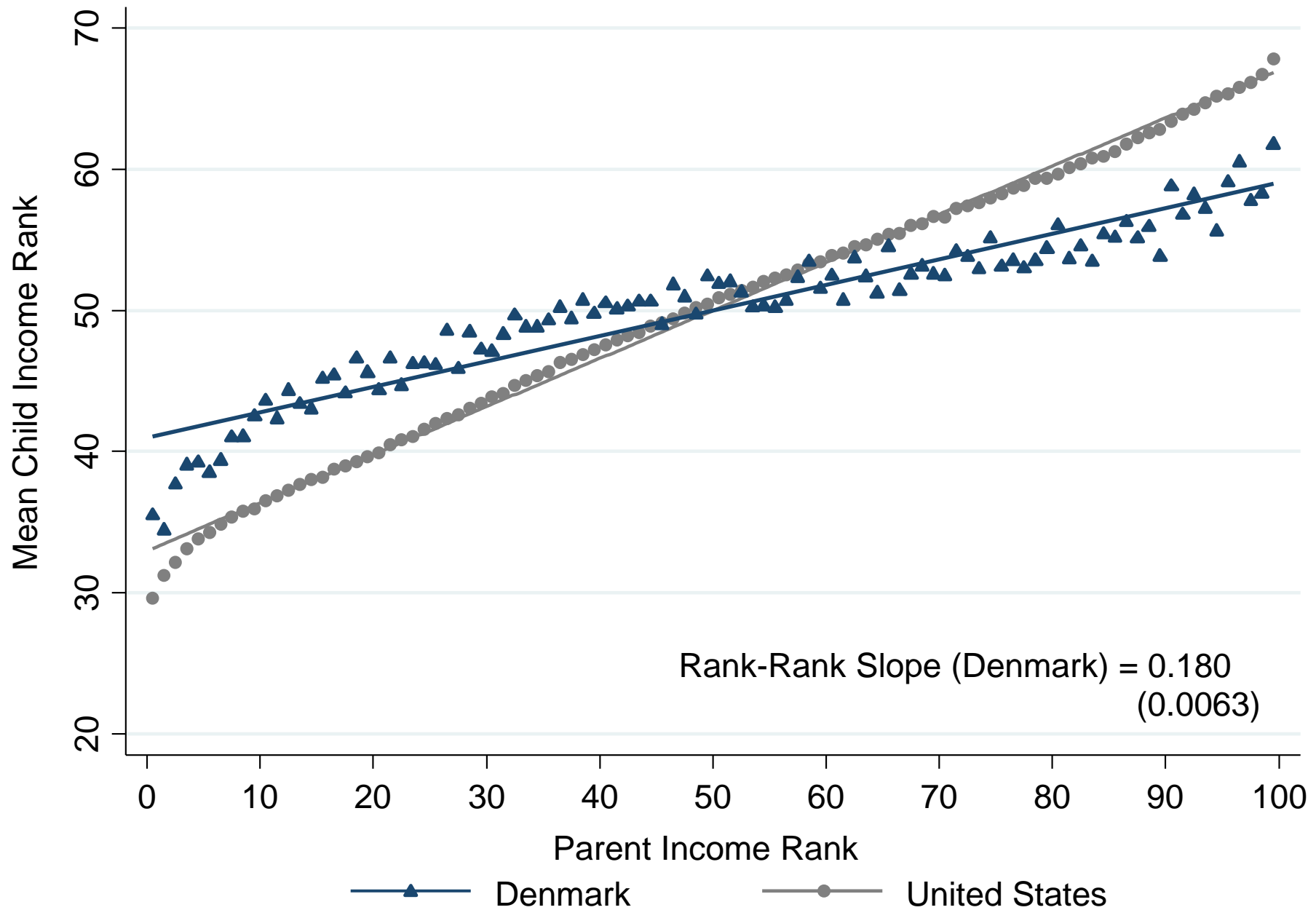
- 1) US has less mobility than European countries (especially Scandinavian countries such as Denmark)
- 2) Substantial heterogeneity in mobility across cities in the US
- 3) Places with low race/income segregation, low income inequality, good K-12 schools, high social capital, high family stability tend to have high mobility [these are correlations and do not imply causality]

A. Mean Child Income Rank vs. Parent Income Rank in the U.S.



Source: Chetty, Hendren, Kline, Saez (2014)

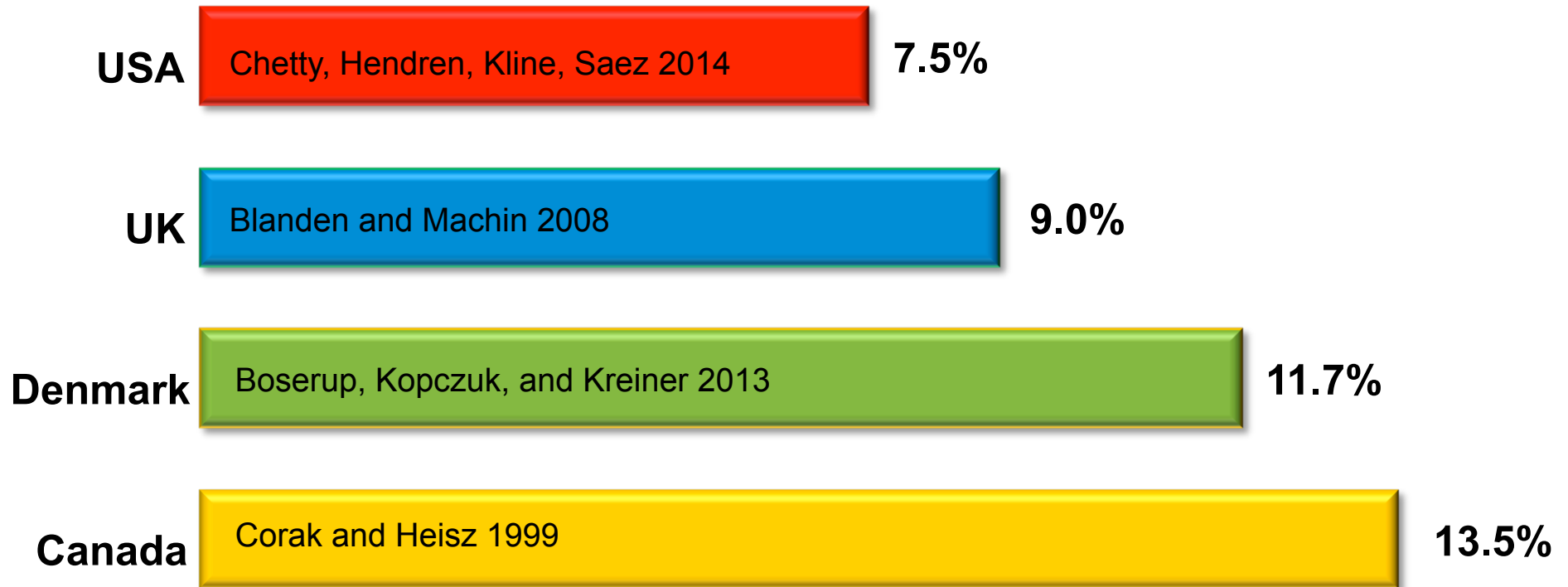
B. United States vs. Denmark



Source: Chetty, Hendren, Kline, Saez (2014)

The American Dream?

- Probability that a child born to parents in the bottom fifth of the income distribution reaches the top fifth:



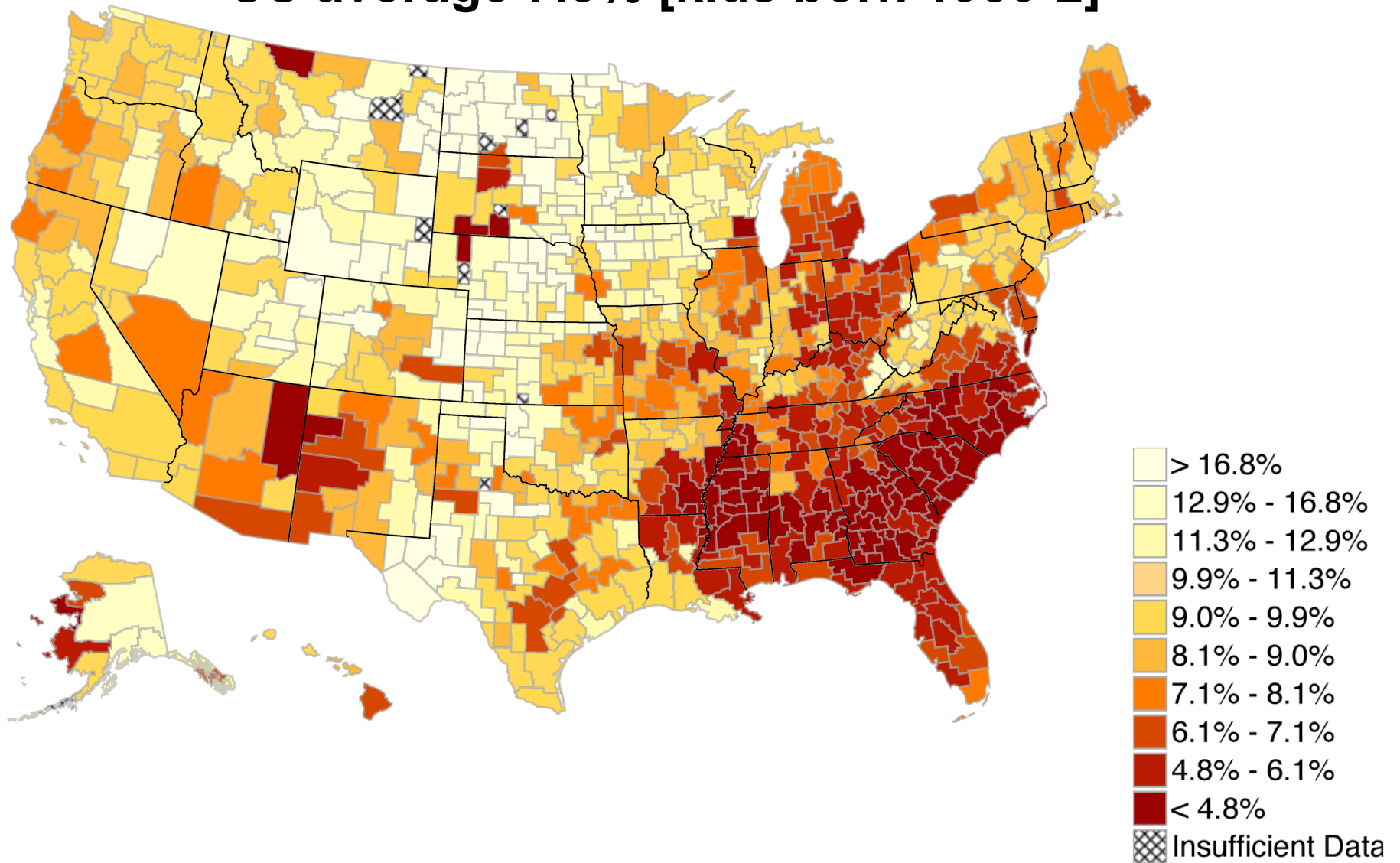
→ Chances of achieving the “American Dream” are almost two times higher in Canada than in the U.S.

Source: Chetty et al. (2014)

The Geography of Upward Mobility in the United States

Probability of Reaching the Top Fifth Starting from the Bottom Fifth

US average 7.5% [kids born 1980-2]



Note: Lighter Color = More Upward Mobility

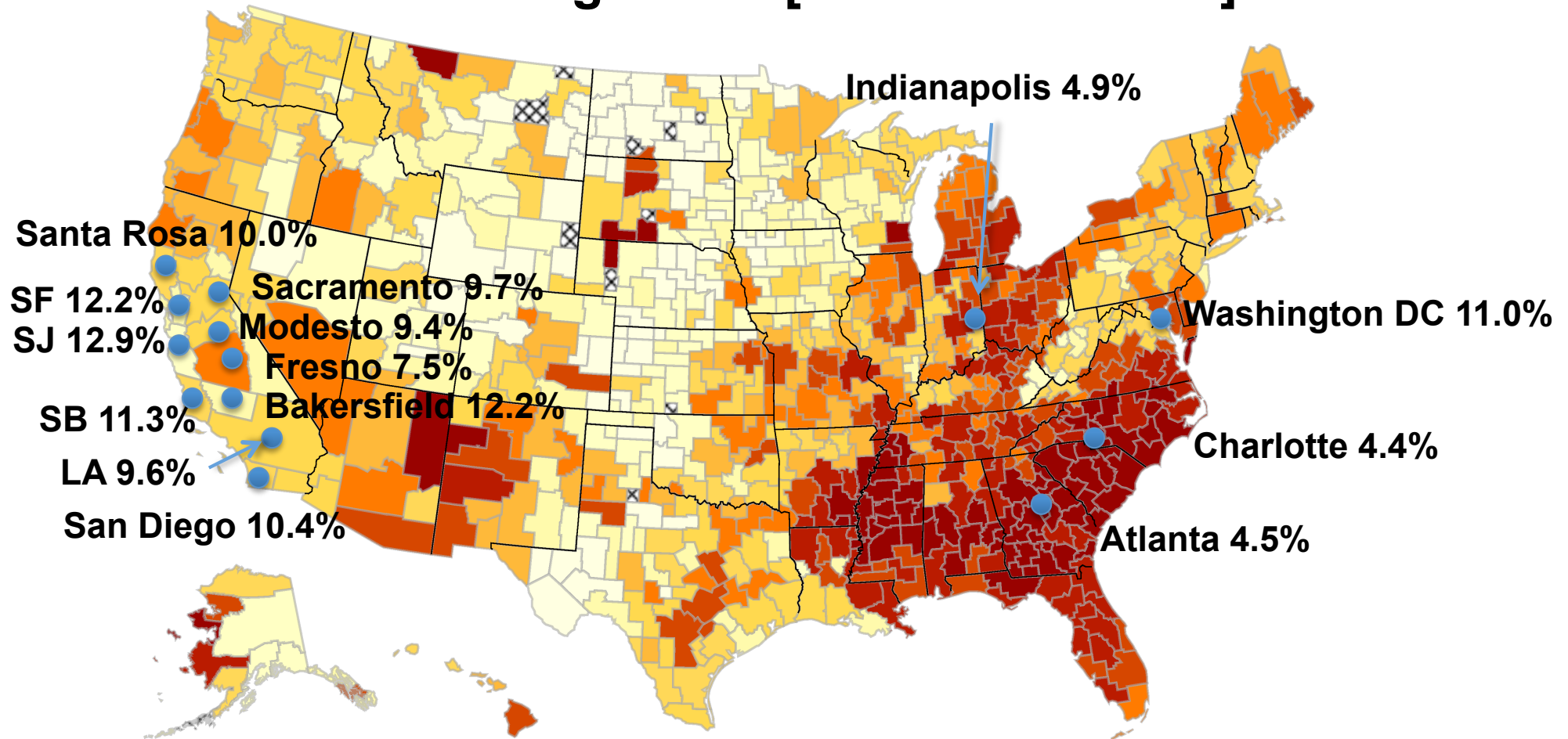
Download Statistics for Your Area at www.equality-of-opportunity.org

Source: Chetty et al. (2014)

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TABLE 1. Upward Mobility in the 50 Largest Metro Areas: The Top 10 and Bottom 10

Rank	Commuting Zone	Odds of Reaching Top Fifth from Bottom Fifth	Rank	Commuting Zone	Odds of Reaching Top Fifth from Bottom Fifth
1	San Jose, CA	12.9%	41	Cleveland, OH	5.1%
2	San Francisco, CA	12.2%	42	St. Louis, MO	5.1%
3	Washington, D.C.	11.0%	43	Raleigh, NC	5.0%
4	Seattle, WA	10.9%	44	Jacksonville, FL	4.9%
5	Salt Lake City, UT	10.8%	45	Columbus, OH	4.9%
6	New York, NY	10.5%	46	Indianapolis, IN	4.9%
7	Boston, MA	10.5%	47	Dayton, OH	4.9%
8	San Diego, CA	10.4%	48	Atlanta, GA	4.5%
9	Newark, NJ	10.2%	49	Milwaukee, WI	4.5%
10	Manchester, NH	10.0%	50	Charlotte, NC	4.4%

Note: This table reports selected statistics from a sample of the 50 largest commuting zones (CZs) according to their populations in the 2000 Census. The columns report the percentage of children whose family income is in the top quintile of the national distribution of child family income conditional on having parent family income in the bottom quintile of the parental national income distribution—these probabilities are taken from Online Data Table VI of Chetty et al., 2014a.

Source: Chetty et al., 2014a.

Govt Redistribution with Taxes and Transfers

Government taxes individuals based on income and consumption and provides transfers: z is pre-tax income, $y = z - T(z) + B(z)$ is post-tax income

1) If inequality in y is less than inequality in $z \Leftrightarrow$ tax and transfer system is redistributive (or progressive)

2) If inequality in y is more than inequality in $z \Leftrightarrow$ tax and transfer system is regressive

a) If $y = z \cdot (1 - t)$ with constant t , tax/transfer system is neutral

b) If $y = z \cdot (1 - t) + G$ where G is a universal (lumpsum) allowance, then tax/transfer system is progressive

c) If $y = z - T$ where T is a uniform tax (poll tax), then tax/transfer system is regressive

Current tax/transfer systems in rich countries look roughly like b)

US Distributional National Accounts

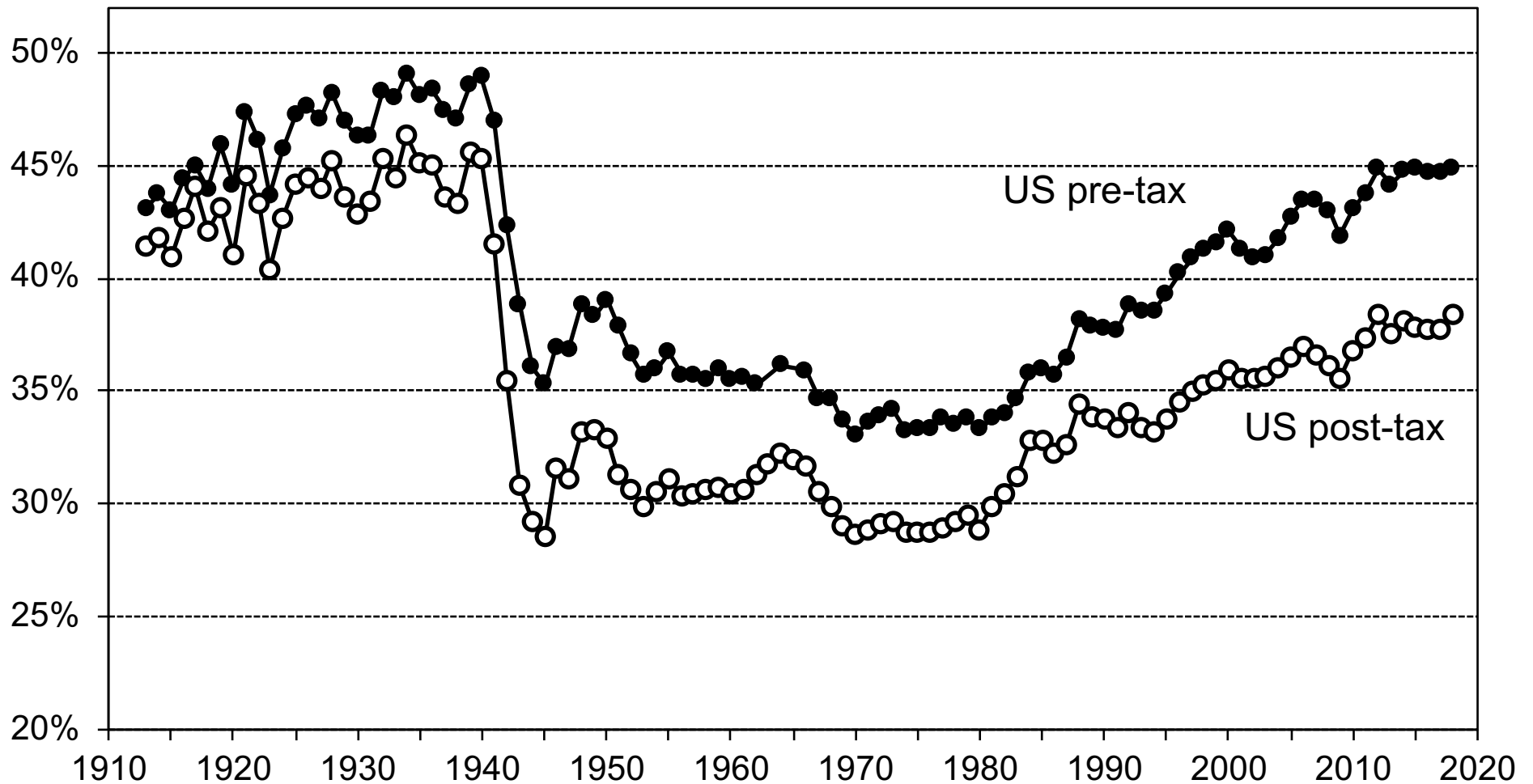
Piketty-Saez-Zucman (2018) distribute both pre-tax and post-tax US national income across adult individuals

Pre-tax income is income before taxes and transfers

Post-tax income is income net of all taxes and adding all transfers and public good spending

Both concepts add up to national income, consistent with national accounts aggregates, and provide a comprehensive view of the mechanical impact of government redistribution

US Top 10% Income Shares pre-tax vs. post-tax, 1913-2018

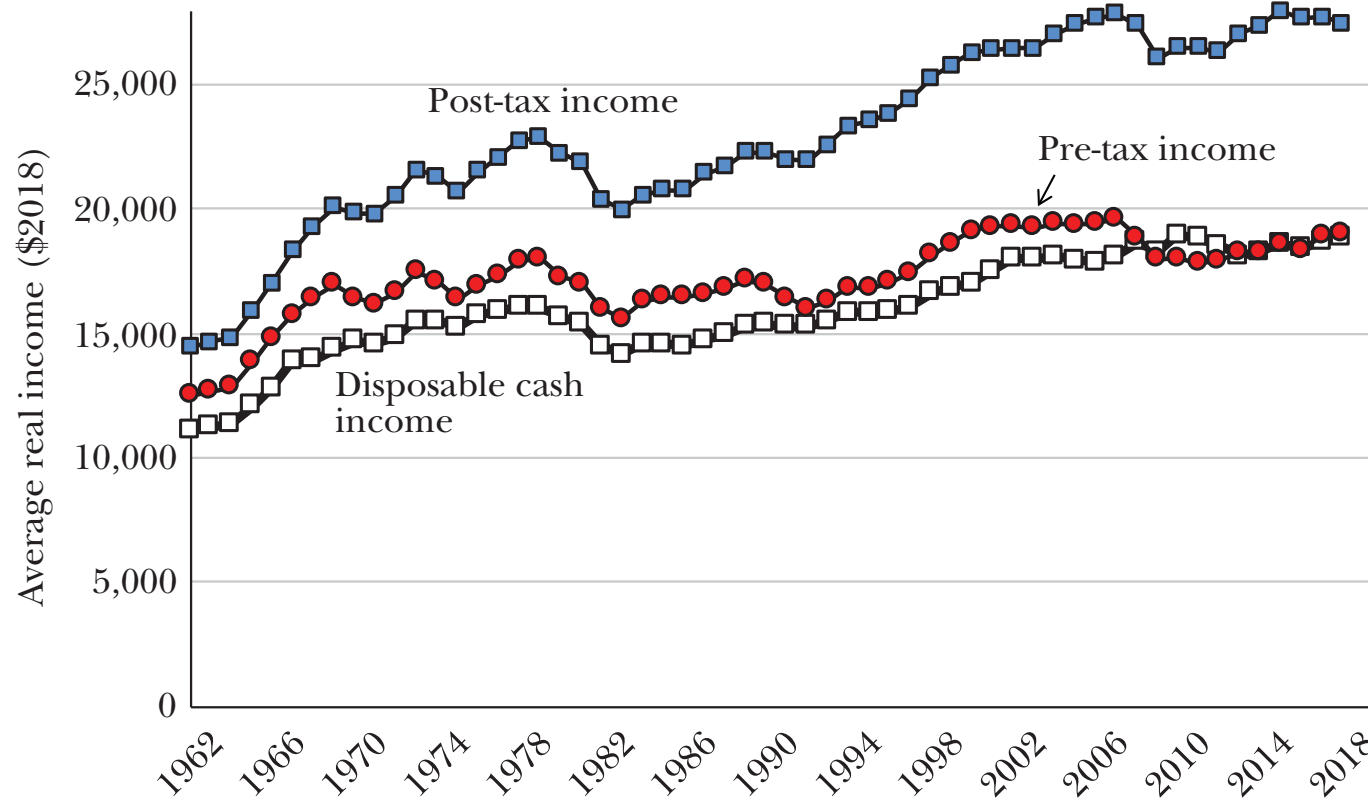


Top income shares of pretax and posttax national income among adults (income within married couples equally split). Source is Piketty, Saez, Zucman (2018) for US and Piketty et al. (2020) for France.

Figure 6

The Evolution of Bottom 50 Percent Incomes

Source: Saez and Zucman JEP2020



Source: Piketty, Saez, and Zucman (2018), updated September 2020.

Note: The figure depicts the evolution of the real incomes per adult (in 2018 dollars) for the bottom half of the income distribution for three income concepts: (1) pre-tax income before deducting taxes or adding government transfers (concept sums up to national income), (2) post-tax income that deducts all taxes and adds all transfers (cash and in-kind) and collective public expenditures minus the government deficit (also sums up to national income), (3) disposable cash income which is pre-tax income minus all taxes plus cash (or quasi-cash) transfers, i.e., (3) does not include in-kind transfers (primarily Medicaid and Medicare) and collective public expenditures that are included in (2).

US tax/transfer System: Progressivity and Evolution

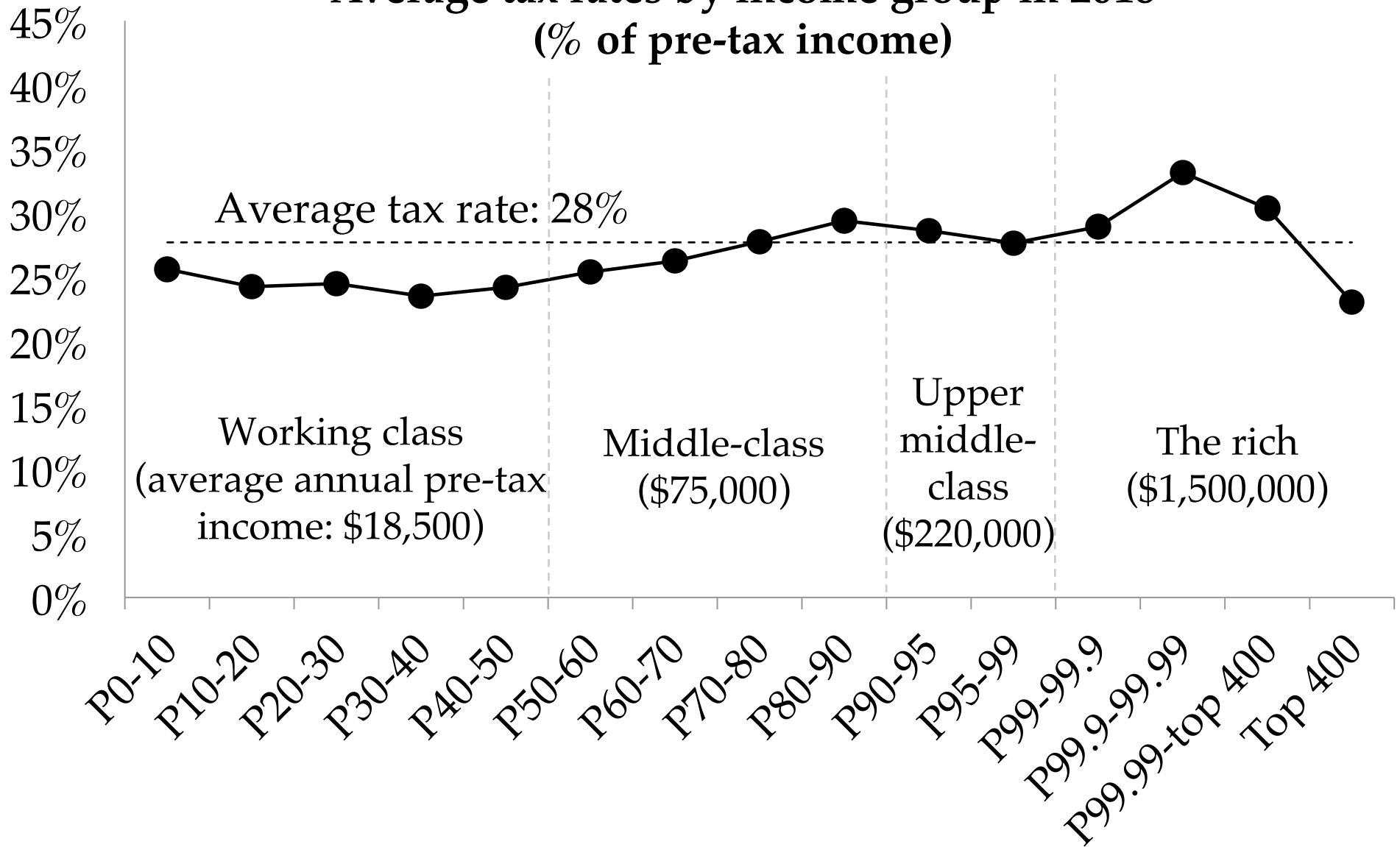
0) US Tax/Transfer system is progressive overall: pre-tax national income is less equally distributed than post-tax/post-transfer national income

1) Medium Term Changes: Federal Tax Progressivity has declined since 1950 (Saez and Zucman 2019) but govt redistribution through transfers has increased (Medicaid, Social Security retirement, DI, UI various income support programs)

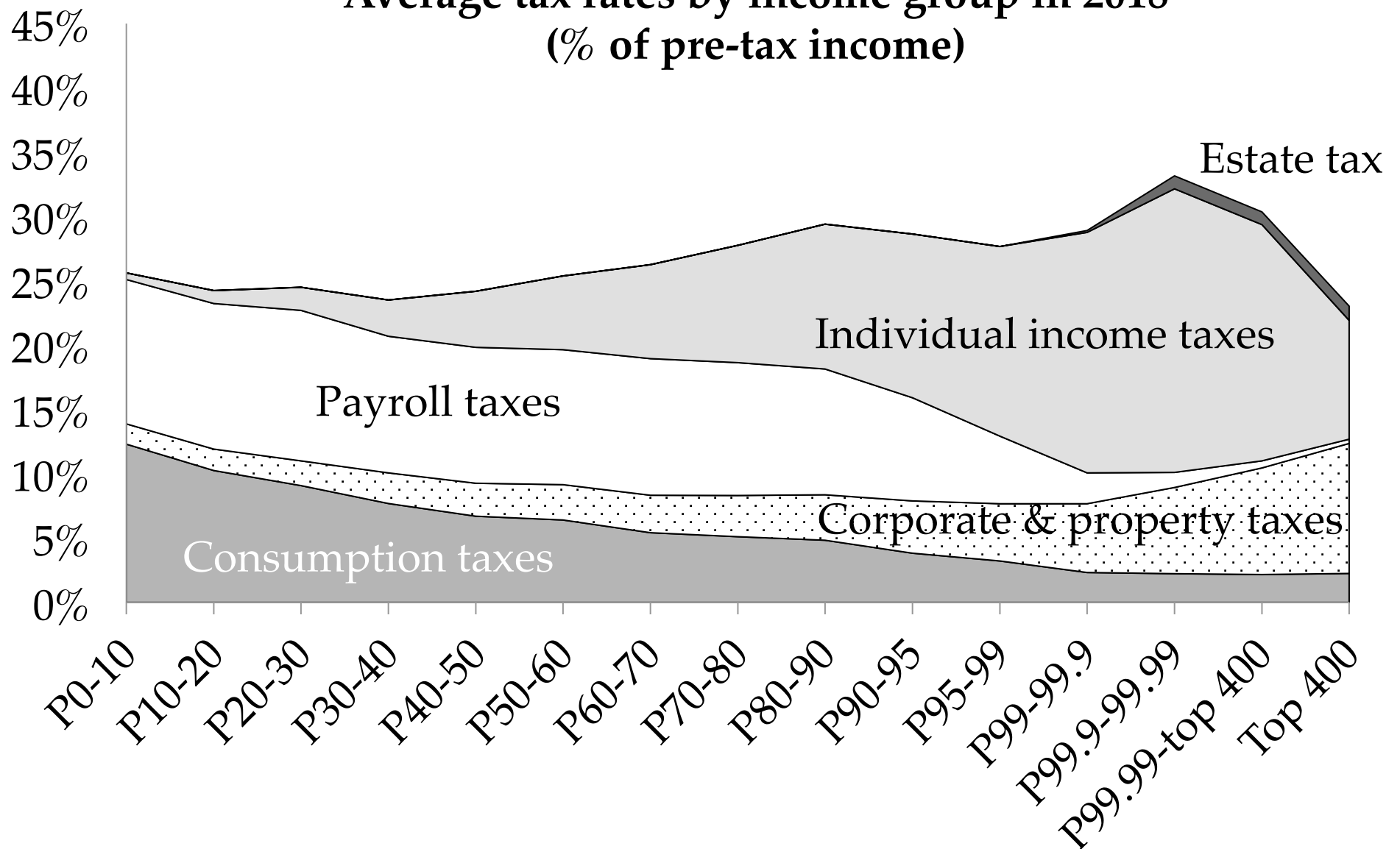
2) Long Term Changes: Before 1913, US taxes were primarily tariffs, excises, and real estate property taxes [slightly regressive], minimal social state (and hence small govt)

<http://www.treasury.gov/education/fact-sheets/taxes/ustax.shtml>

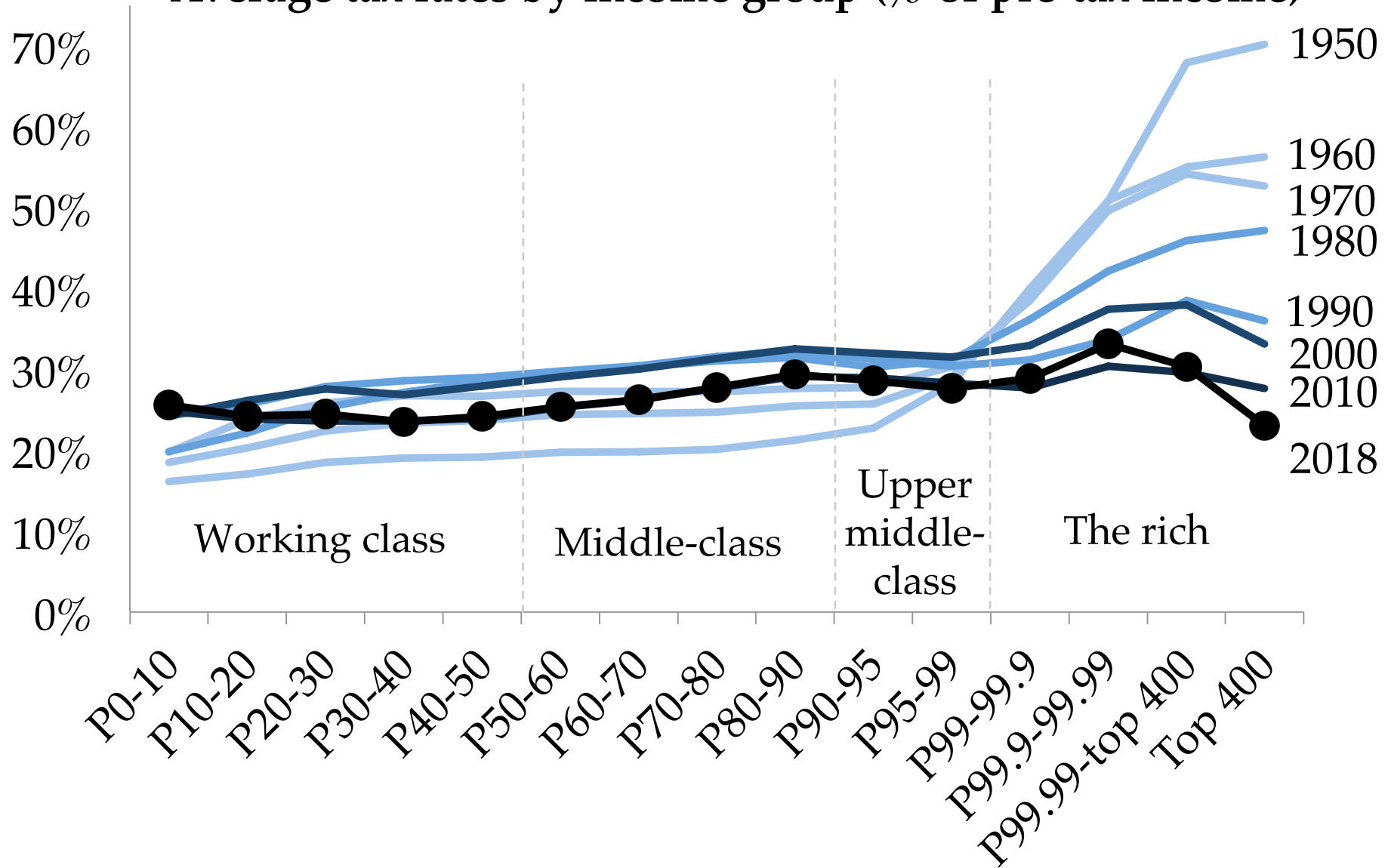
Average tax rates by income group in 2018 (% of pre-tax income)



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



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



Federal US Tax System (2/3 of total taxes)

- 1) Individual income tax (on both labor+capital income) [progressive](40% of fed tax revenue)
- 2) Payroll taxes (on labor income) financing social security programs [about neutral] (40% of revenue)
- 3) Corporate income tax (on capital income) [progressive if incidence on capital income] (15% of revenue)
- 4) Estate taxes (on capital income) [very progressive] (1% of revenue)
- 5) Minor excise taxes (on consumption) [regressive] (3% of revenue)

Fed agencies (CBO, Treasury, Joint Committee on Taxation) and think-tanks (Tax Policy Center) provide distributional Fed tax tables

State+Local Tax System (1/3 of total taxes)

Decentralized governments can experiment, be tailored to local views, create tax competition and make redistribution harder (famous Tiebout 1956 model) hence favored by conservatives

1) Individual + Corporate income taxes [progressive] (1/3 of state+local tax revenue)

2) Sales taxes + Excise taxes (tax on consumption) [regressive] (1/3 of revenue)

3) Real estate property taxes (on capital income) [slightly progressive] (1/3 of revenue)

See ITEP (2018) “Who Pays” for systematic state level distributional tax tables

US Census provides Census of Government data

Government Redistribution in Practice

1) Tax system: Taxes can be more or less progressive (right vs. left debate). Most OECD countries today have fairly flat tax systems. Taxes used to be very progressive in US and UK.

2) Social state: (size of social state also right vs. left debate)

a) Publicly funded education: everybody gets access to quality education \Rightarrow Redistributive and gives opportunity

b) Universal health care (outside US): everybody gets access to quality health care \Rightarrow Redistributive by income and health

c) Retirement benefits: old get support \Rightarrow redistributive in cross-section but not necessarily on life-time basis

d) Income support: direct redistribution but tends to be targeted to specific groups (children, unemployed, disabled, elderly) or in-kind (housing, nutrition, training)

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