
Rising Inequality

Theories, Debates, Evidence

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Structure

- Dimensions of Inequality
- Why Research Inequality?
- Explanations of Inequality
- Policy Conclusions

Dimensions of Inequality

Income vs Wealth Inequality

- related but different
- different:
 - income: **flow** of money streams (over a year)
 - (net) wealth: **stock** of total assets (net of liabilities)
- related: income not used for consumption (taxes, transfers)
 - passively accumulates into wealth (bank account)
 - actively used to buy assets (real estate, saving account, bonds, stocks)

Functional vs Personal Income Distribution

- Functional Distribution of Income (Factor Distribution)
 - distribution between factors of production: capital (profit and rent) and labour (wages and transfers)
 - labour or wage share: share of labour income in national income
 - adjusted wage share: adjusted for the change in self-employment
- Personal Distribution of Income (Size Distribution of Income)
 - distribution of total income (labour + capital) between individual or households
 - Gini coefficient, top X% income share

Income Distribution between Groups

- between
 - men and women (gender pay gap)
 - ethnic groups
 - occupations
- “raw” difference vs “unexplained” difference
 - example of gender pay gap
 - raw: experienced difference in daily live
 - statistically unexplained: “pure discrimination”

Two Questions

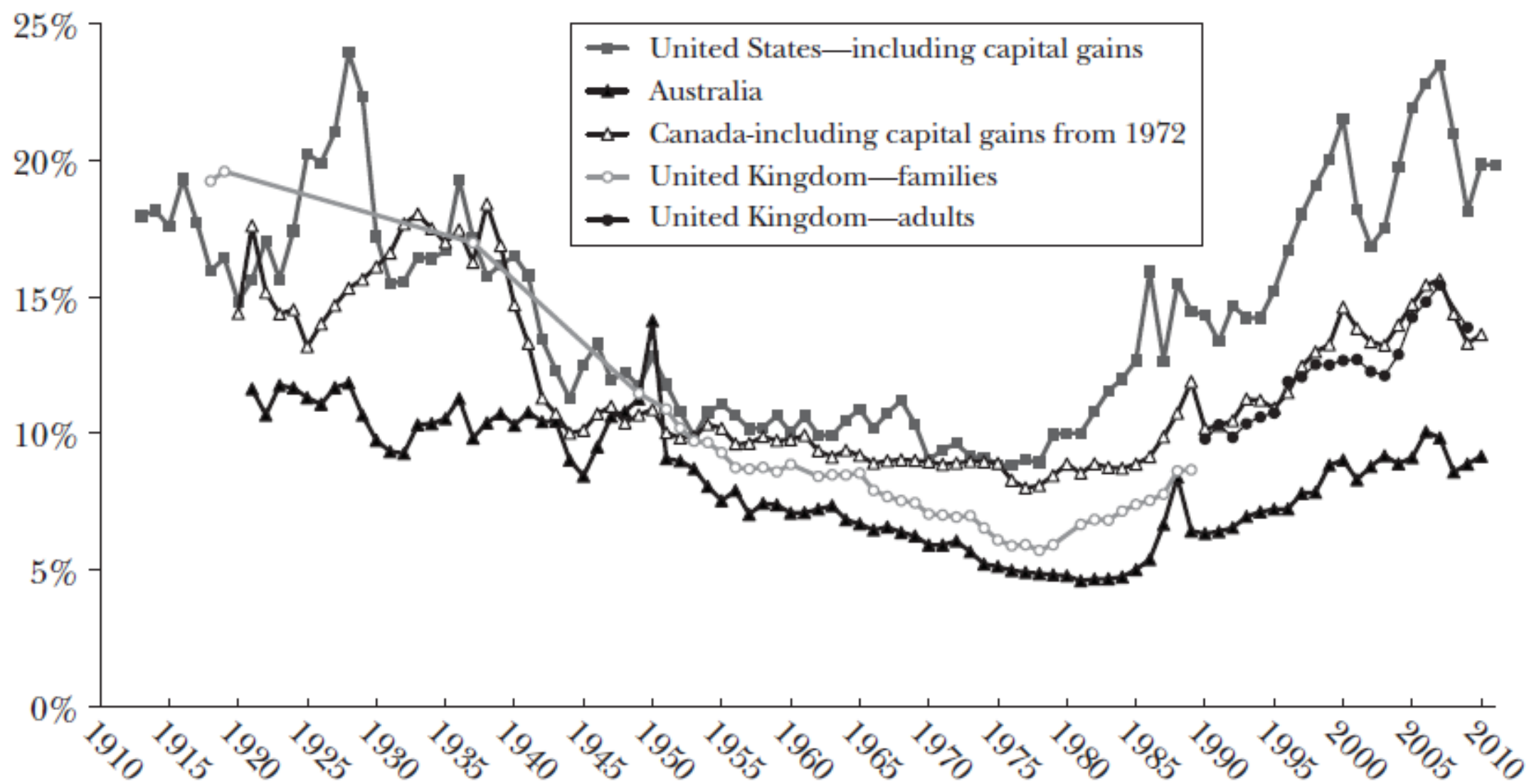
- Why do people earn different incomes?
(explain cross section heterogeneity)
- Why does the distribution (of income) change over time?
(explain trends over time)
- some explanations will be useful for both questions,
some only for one of them

Other dimensions

- regional: between counties / statistical regions
- global: between countries

Why are Economists interested in Inequality?

A: Top 1 Percent Income Shares in English-speaking Countries (U-Shape)



B: Top 1 Percent Income Shares in Continental Europe and Japan (L-Shape)

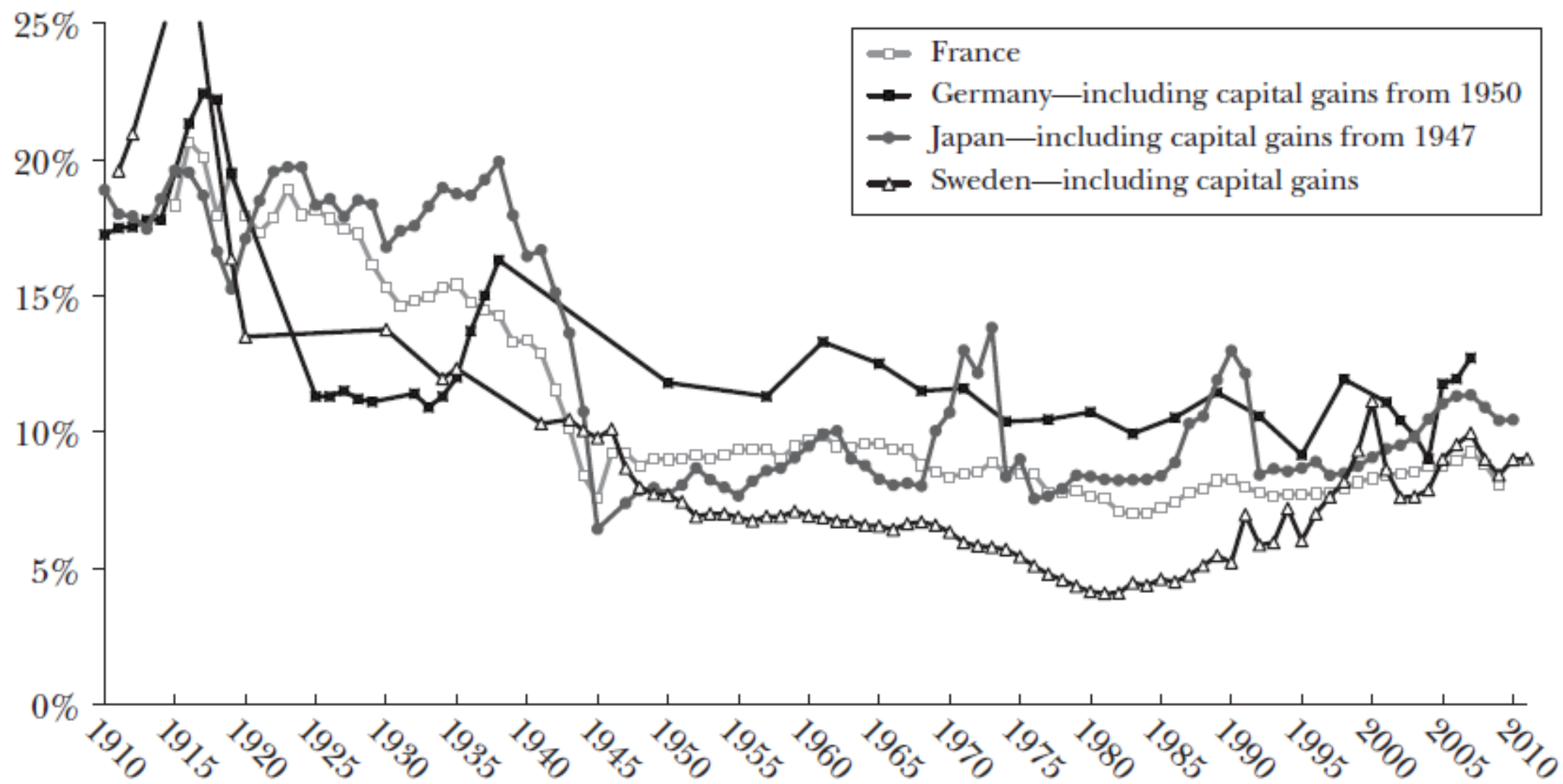
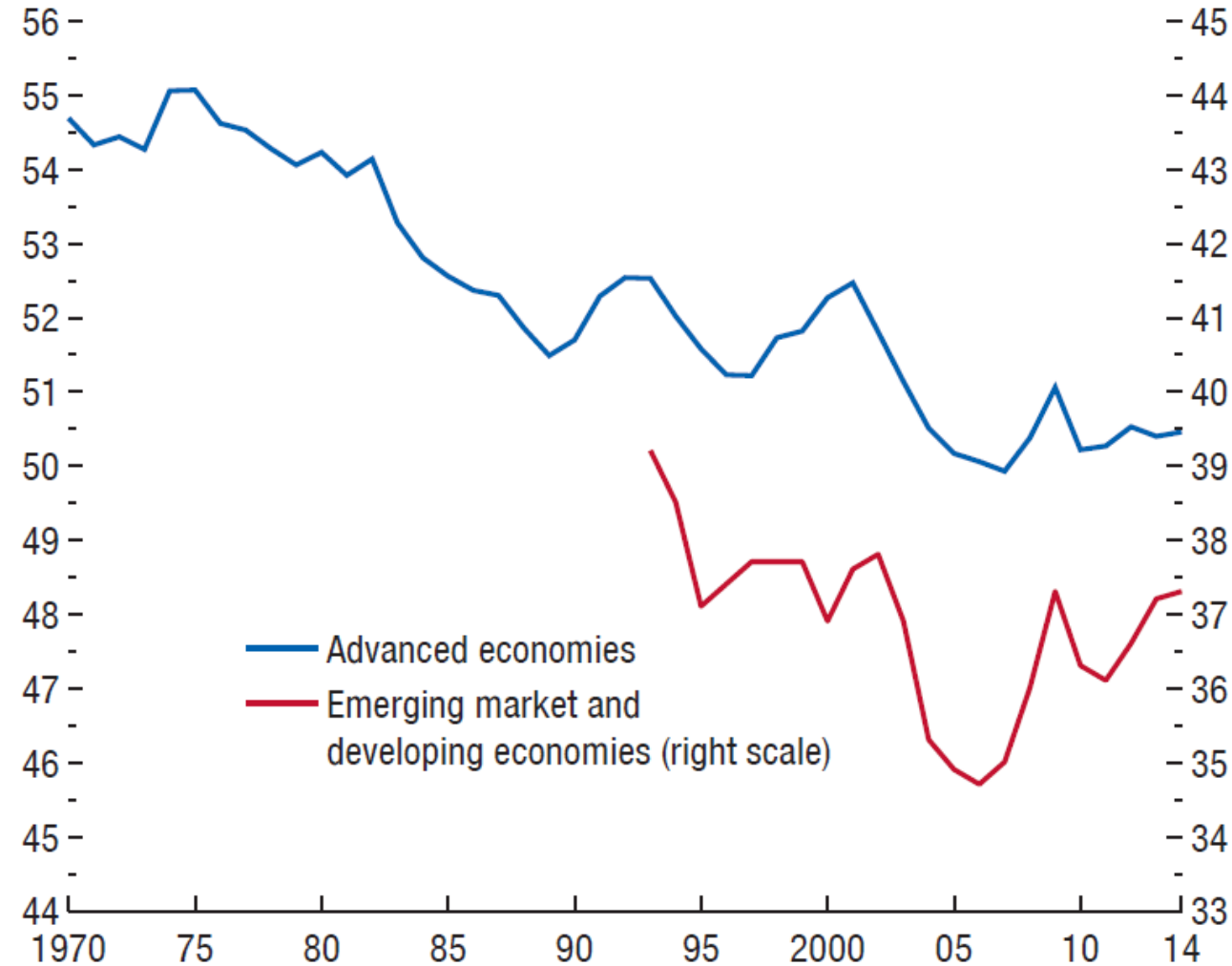


Figure 3.1. Evolution of the Labor Share of Income

(Percent)

The labor share of income has been on a downward trend in both advanced economies and emerging market and developing economies.



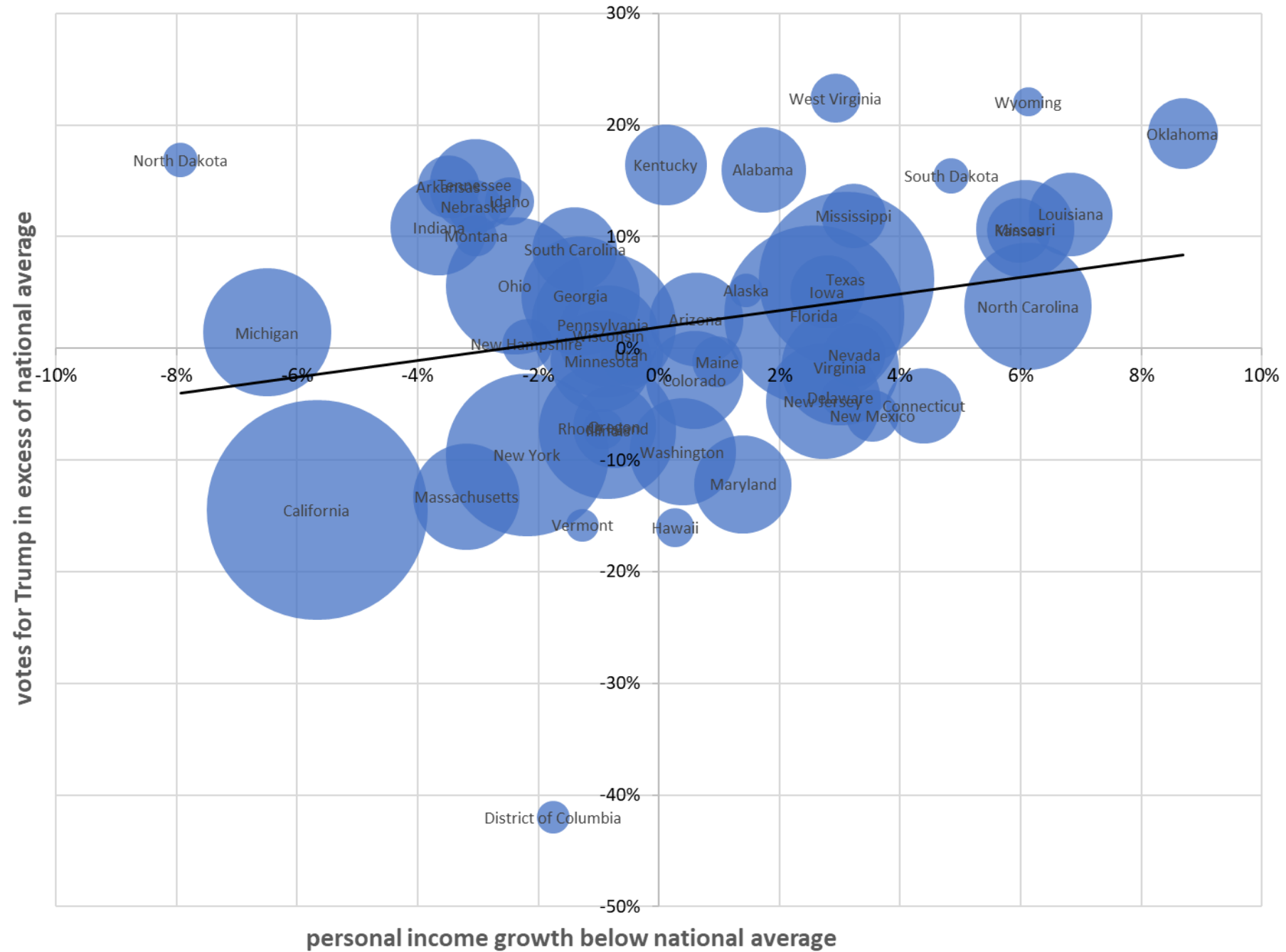
Fairness

- Humans value fairness and dislike inequality

Political Fallout

source: BEA GDP by state and Federal Election Commission

USA: Personal Income Growth 2008-2016 and Votes for Trump in 2016



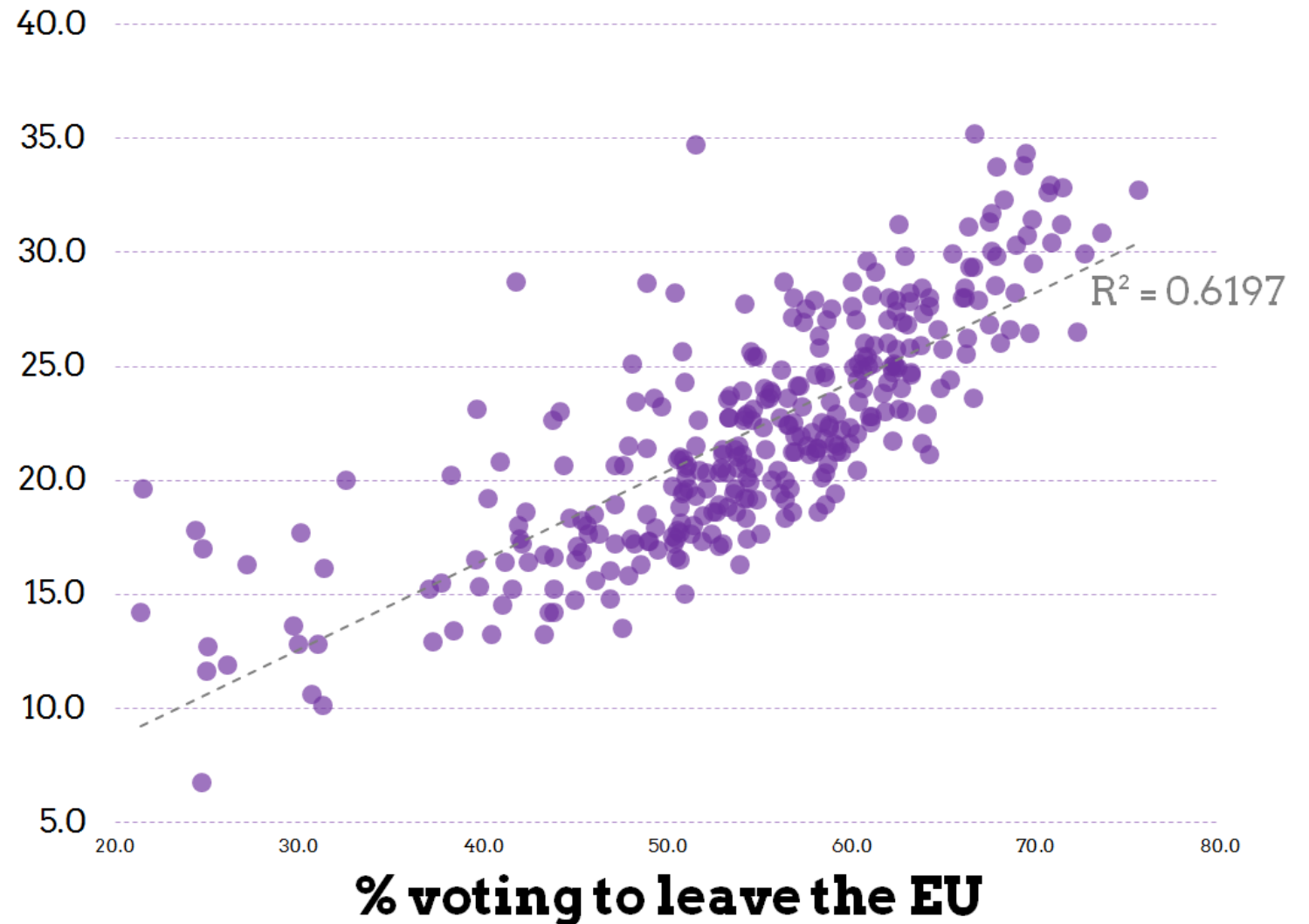
Political Fallout

**% with no
qualifications**

source:

[http://www.statsmaps
npix.com/2016/06/wh
at-can-explain-
brexit.html](http://www.statsmaps
npix.com/2016/06/wh
at-can-explain-
brexit.html)

Brexit: % leave vs no qualifications



Impact on Economic Growth

- Many different channels
- (Post-)Keynesian argument: difference in saving rates
 - high propensity to consume of wage/low income earners boosts AD
- Neoclassical arguments:
 - no role in baseline models (NK-DSGE, Solow)
 - a large proportion of poor households: inhibits investment in (human) capital (Galor & Zeira 1993; Aghion & Bolton 1997; Piketty 1997; Ghatak et al. 2001)
 - inequality leads to inefficient redistribution and taxation (Persson & Tabellini 1994)
 - positive impact on output level since the rich save more (Bourguignon 1981)
 - negative impact due to rent seeking and corruption (Glaeser et al. 2003)

Impact on Economic Growth

- Positive but unsustainable impact on growth
 - increasing income polarization triggers debt-financed social status spending
 - mainstream (Kumhof et al. 2012, Frank et al. 2015) and PK (Kapeller and Schütz 2014, van Treeck) authors have used that argument:

Explanations of Income and Wealth Inequality

An Overview

- (Guschanski and Onaran 2018)
- technology and skill-biased technological change
- declining bargaining power of workers
 - globalization
 - financialization
 - concentration
 - labour market institutions (welfare state retrenchment)
- rent extraction and the superstar firm
- tax rates
- individual effort / ability / luck

skill-biased technological change

Skill-biased technological change

- technological change makes capital more productive
- firms strongly substitute labour for capital (elasticity of substitution > 1)
- labour share declines
- similarly some skills become more productive than others (programming, data analysis, ...) (wage) income distribution widens
- increase in inequality is “natural”

Skill-biased technological change (SBTC)

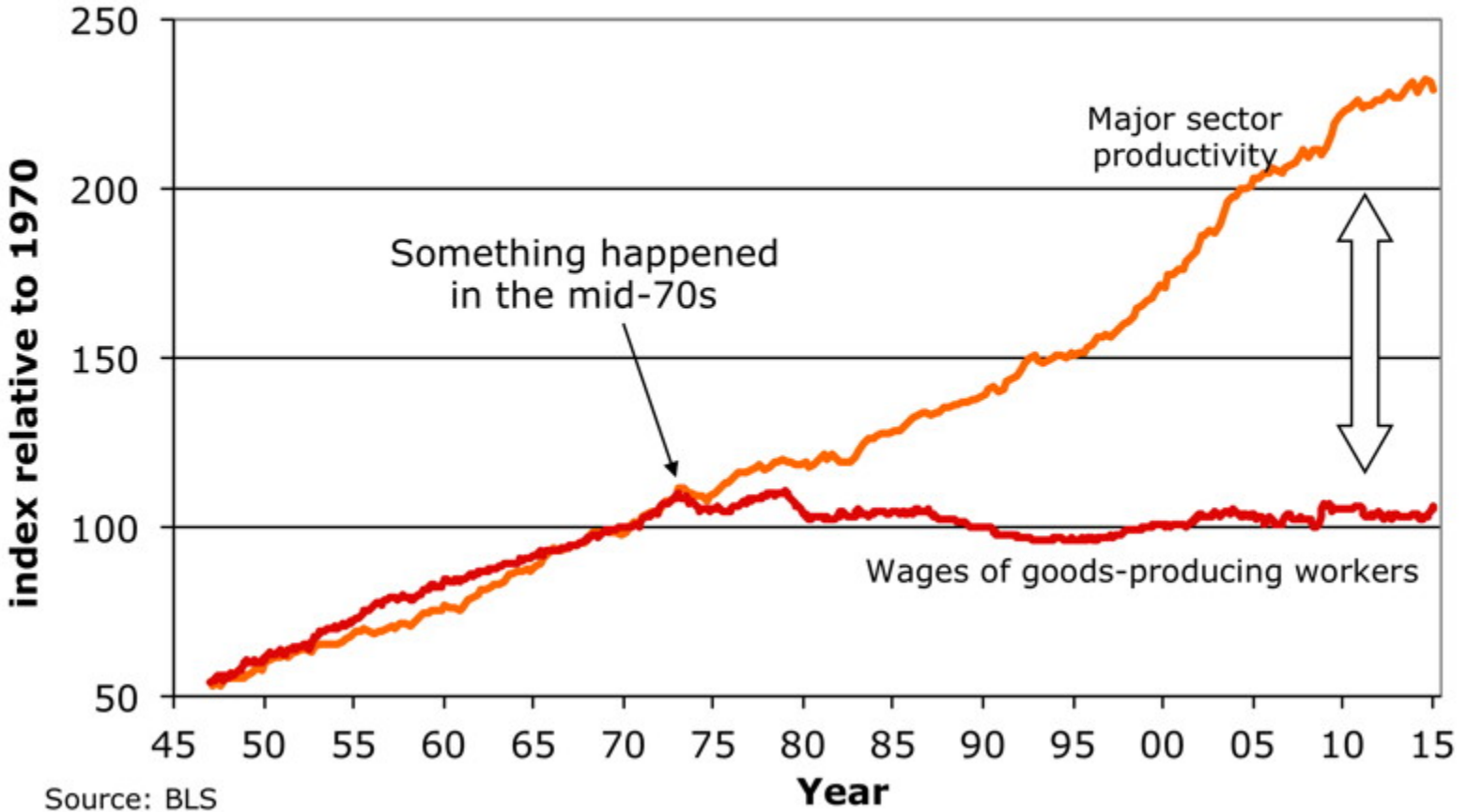
- Do firms strongly substitute (elasticity > 1) capital for labour?
- empirical evidence inconclusive
 - direct evidence of SBTC
(Bassanini and Manfredi, 2014; Bentolila and Saint-Paul, 2003; European Commission, 2007; Hutchinson and Persyn, 2012; IMF, 2007, 2017)
 - no support for elasticity of substitution > 1
(Chirinko, 2008; Chirinko and Mallick, 2014)
- Guschanski and Onaran (2018) find only secondary role for SBTC

bargaining power

Declining Bargaining Power

- Deviating from standard Solow assumption: $\frac{\partial f(K,L)}{\partial L} = w$
- Wages do not necessarily reflect productivity increases
- Different bargaining models
 - firms set employment, bargains over real wage (requires elasticity < 1)
 - bargain over real wage and employment
 - firms set prices, bargains over nominal wage

Productivity and average real earnings



Source: BLS

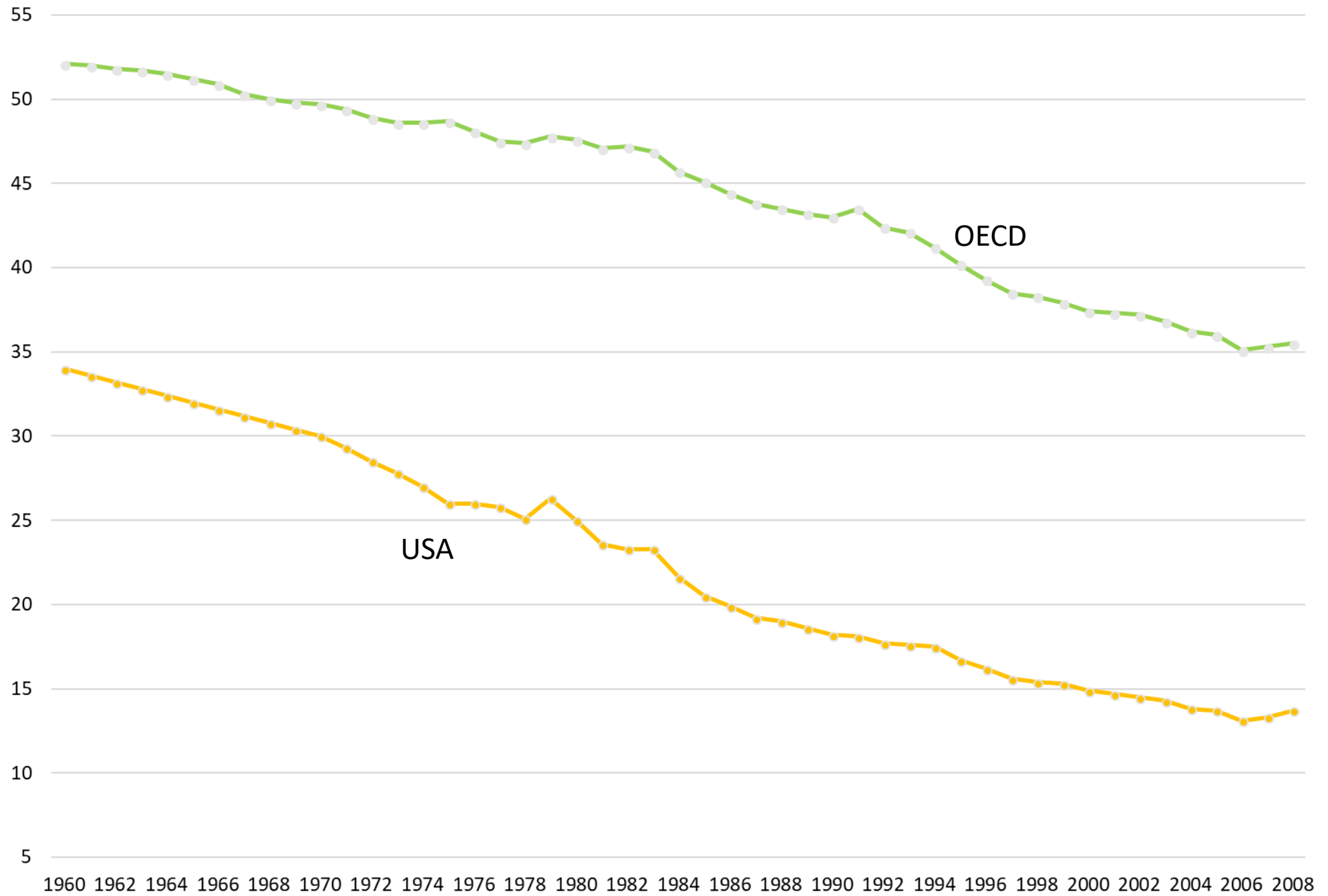
Reduction of bargaining power: channels

- globalization
 - reduction of trade barriers and capital controls
 - strengthen capital bargaining position (relocation)
- labour market institutions (welfare state retrenchment)
 - e.g. collective bargaining coverage and unemployment benefits
 - strengthen labour's bargaining position

Reduction of bargaining power: channels

- concentration
 - higher markup (i.e. firms manage to sustain high prices)
 - monopsony power (i.e. firms manage to pay low wages)
 - redistribution of value added towards capital
- financialization
 - alternative forms of profit for nonfinancial business
 - increased financial overhead costs
 - shareholder value orientation forces short term profitability focus
 - household sector indebtedness acts as disciplining force

Collective bargaining coverage (percentage of employees)



rent extraction and the superstar firm

rent extraction and the superstar firm

- a small number of highly productive firms grows much faster
- Why?
 - Network effects (Amazon, Google, Facebook)
 - Path dependency (Microsoft)
 - Brand value (Apple)
- reduction of aggregate labour share
- increase wage dispersion if superstar firms pay well

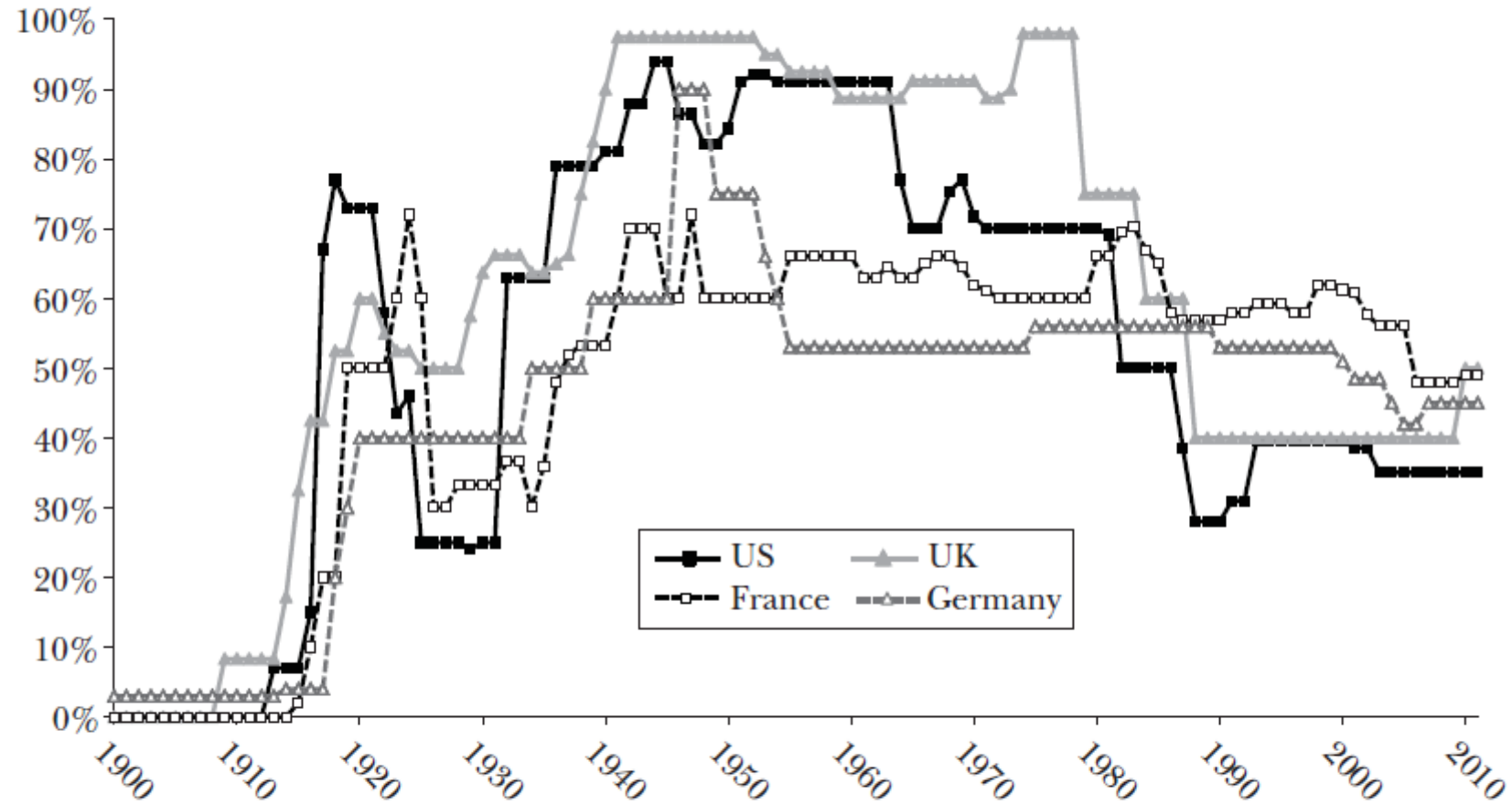
tax rates and tax avoidance

Tax rates

- High marginal income (personal and corporate) tax rates as well as inheritance and wealth tax rates can slow down accumulation of wealth

Figure 3

Top Marginal Income Tax Rates, 1900–2011



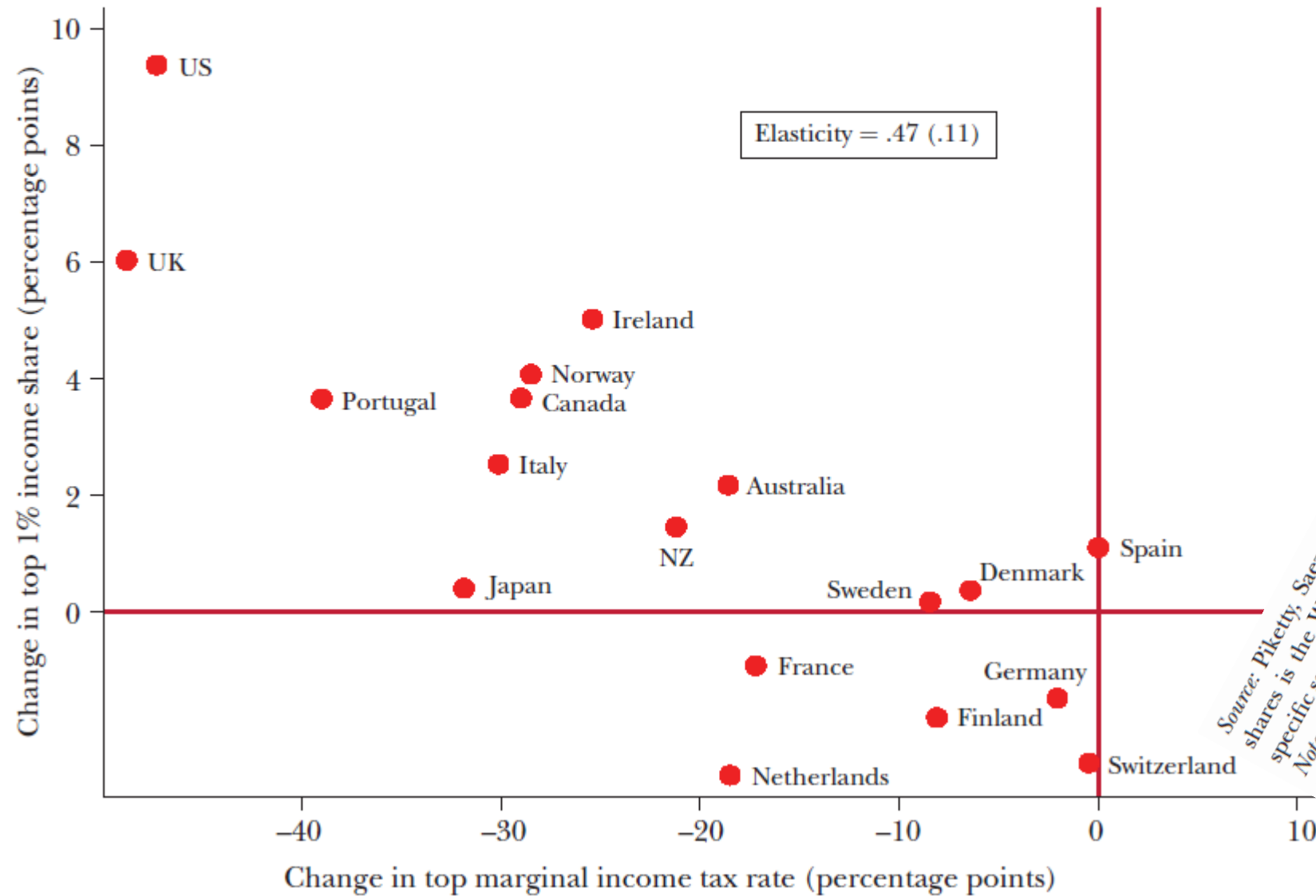
Source: Piketty and Saez (2013, figure 1).

Notes: The figure depicts the top marginal individual income tax rate in the United States, United Kingdom, France, and Germany since 1900. The tax rate includes only the top statutory individual income tax rate applying to ordinary income with no tax preference. State income taxes are not included in the case of the United States. For France, we include both the progressive individual income tax and the flat rate tax “Contribution Sociale Generalisée.”

Figure 4

Changes in Top Income Shares and Top Marginal Income Tax Rates since 1960

(combining both central and local government income taxes)

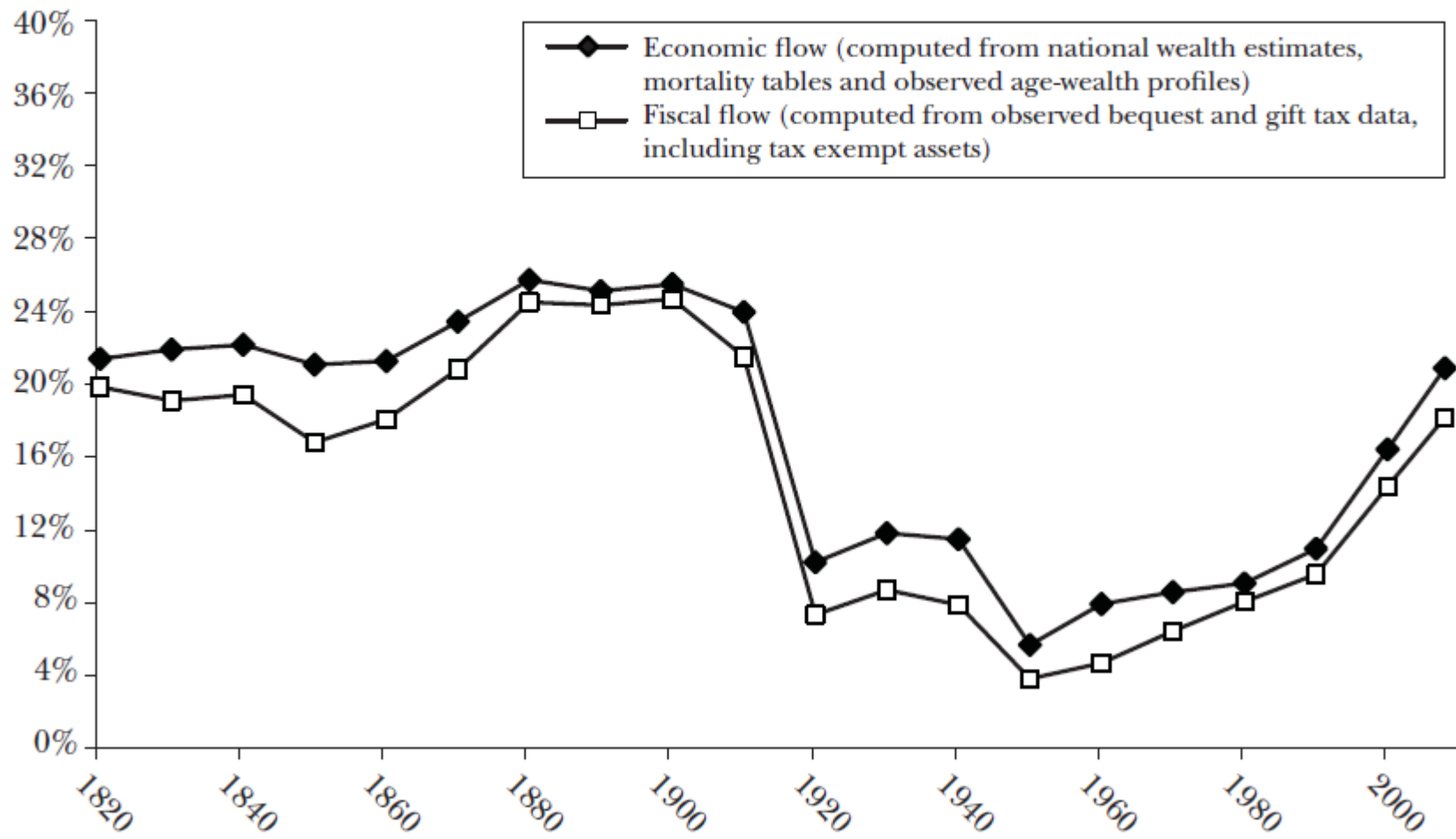


Source: Piketty, Saez, and Stantcheva (2011, revised October 2012, figure 3). Source for top income shares is the World Top Incomes Database. Source for top income tax rates is OECD and country-specific sources.

Notes: The figure depicts the change in the top 1 percent income share against the change in the top income tax rate from 1960–64 to 2005–2009 for 18 OECD countries. If the country does not have recent 5 years of data for those years, we select the first available five years after 1960 and the most Italy (1974), Portugal (1976), Spain (1981). For Switzerland, the data end in 1995 (they end in 2005 or after for all the other countries). Top tax rates include both the central and local government top tax rates. The correlation between those changes is very strong. The elasticity estimates of the ordinary least squares regression of $\Delta \log(\text{top } 1\% \text{ share})$ on $\Delta \log(1 - \text{MTR})$ based on the depicted dots is 0.47 (0.11).

Figure 5

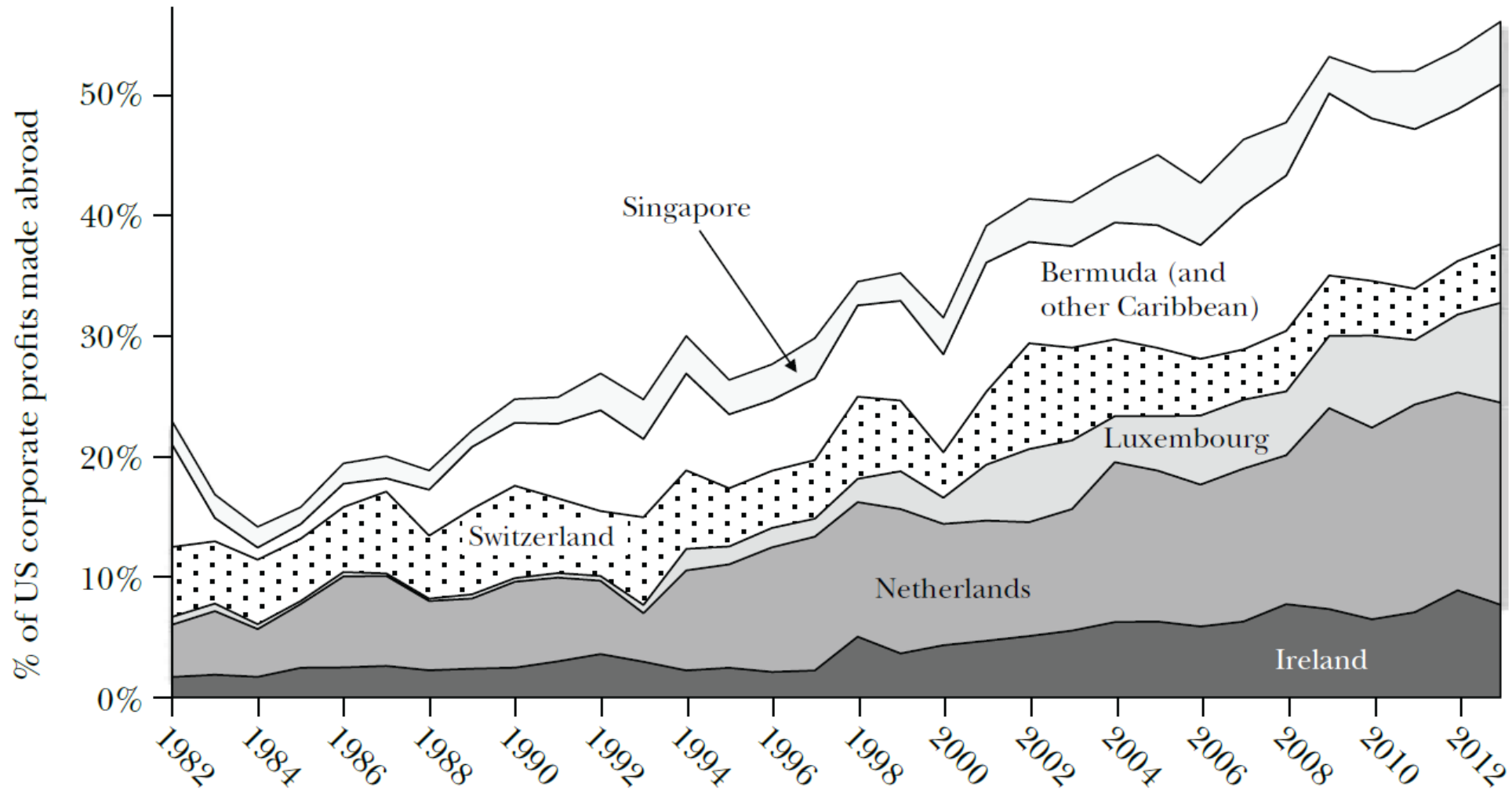
Annual Inheritance Flow as a Fraction of Disposable Income, France 1820–2008



Source: Piketty (2011).

Notes: The annual inheritance flow is defined as the total market value of all assets (tangible and financial assets, net of financial liabilities) transmitted at death or through *inter vivos* gifts. Disposable income was as high as 90–95 percent of national income during the 19th century and early 20th century (when taxes and transfers were almost nonexistent), while it is now about 70 percent of national income.

The Share of Tax Havens in US Corporate Profits Made Abroad



Source: Author's computations using balance of payments data. See online Appendix.

Notes: This figure charts the share of income on US direct investment abroad made in the main tax havens. In 2013, total income on US direct investment abroad was about \$500 billion. Seventeen percent came from the Netherlands, 8 percent from Luxembourg, etc.

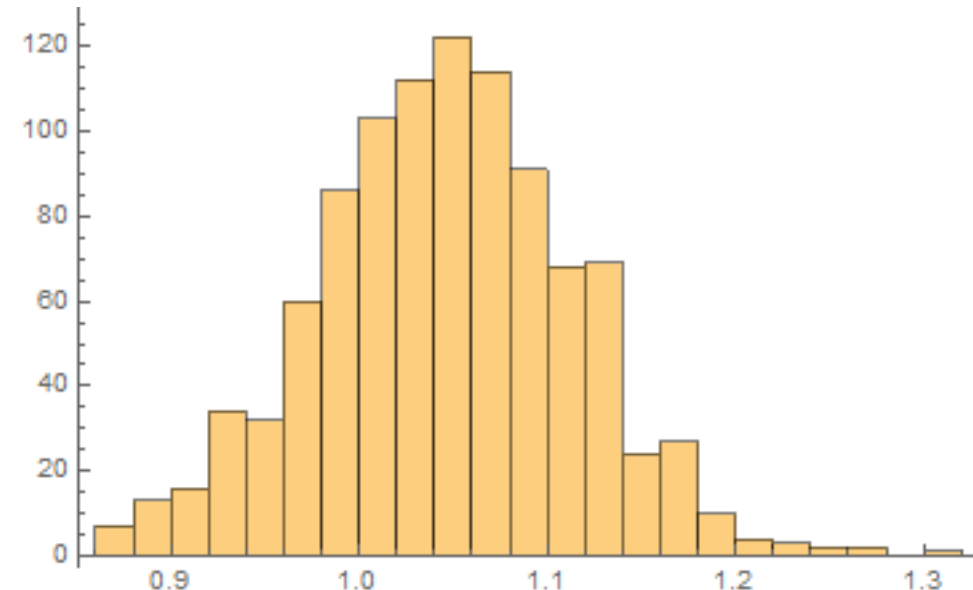
luck / individual effort / ability

individual effort / ability / luck

- it can be shown that under fairly general conditions a population becomes fairly unequal over time
- basic argument
 - inheritance allows luck to accumulate
 - (+ network effects give rise to path dependency: “rich get richer” ; “Mathew effect”)
 - higher yields due to scale
 - feedback between economic and political power

A simple simulation

- Population $N = 10,000$ and $T = 200$
- each agent i starts in round $t = 0$ with wealth $w_{i,0} = 10$
- each round each agent gains or loses part of their wealth based on $N(1.04 ; 0.07)$
- What kind of wealth distribution emerges after 200 rounds?



A simple simulation

- Let's look at the upper tail: the top 1% ($n = 100$)
- Null hypothesis: Log-Normal Distribution[12.2 ; 0.293]
 - p-value: 0.0149967
- Null hypothesis: Pareto Distribution[147,381 ; 3.53]
 - p-value: 0.886979
- What's special about Pareto Distribution[μ ; α]?
 - mean is ∞ for $\alpha \leq 1$
 - variance is ∞ for $\alpha \leq 2$

A simple simulation

- Why is this interesting?
- Interpretation:
 - starting point: complete equality
 - same abilities / effort: everybody's changes drawn from $N(1.04 ; 0.07)$
 - BUT:
 - we can have extraordinary lucky individuals
 - we have inheritance (we allow individuals to “live” for 200 periods/years)
- fairly equal starting conditions yield striking inequalities over time
- adding “power” (e.g. higher returns for wealthy individuals) enforces inequalities

(See: Yakovenko and Rosser 2009 - Statistical mechanics of money, wealth, and income)

Policy Implications

Policy Implications

- restore and strengthen bargaining power of labour
 - union density
 - minimum wages
 - unemployment protection (welfare state)
- restore top bracket income tax rates; reintroduce wealth taxes

A word on wealth taxation

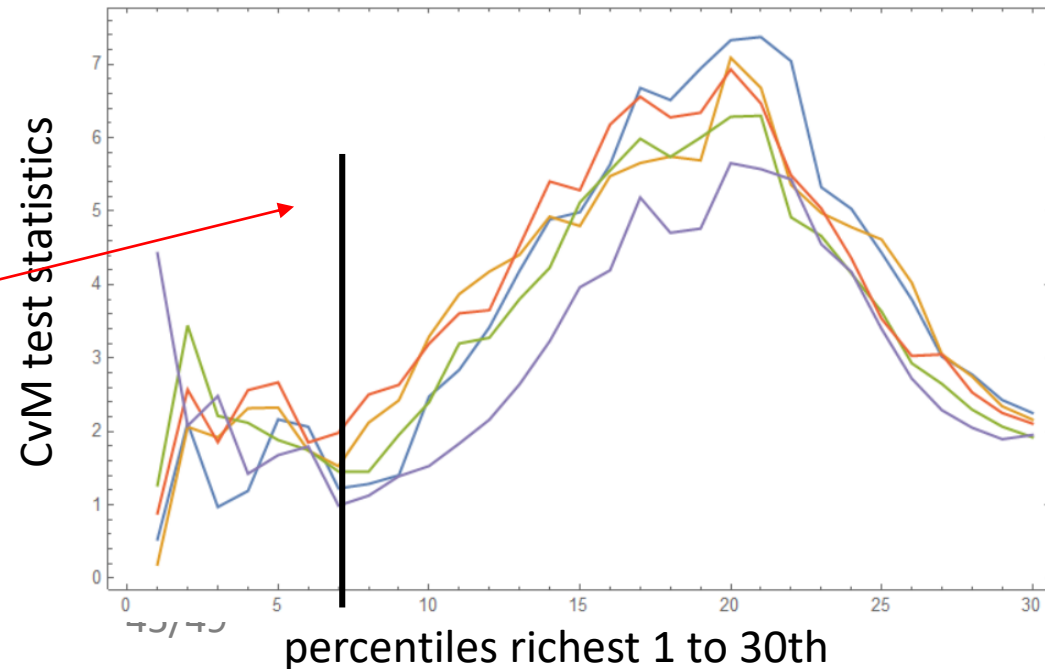
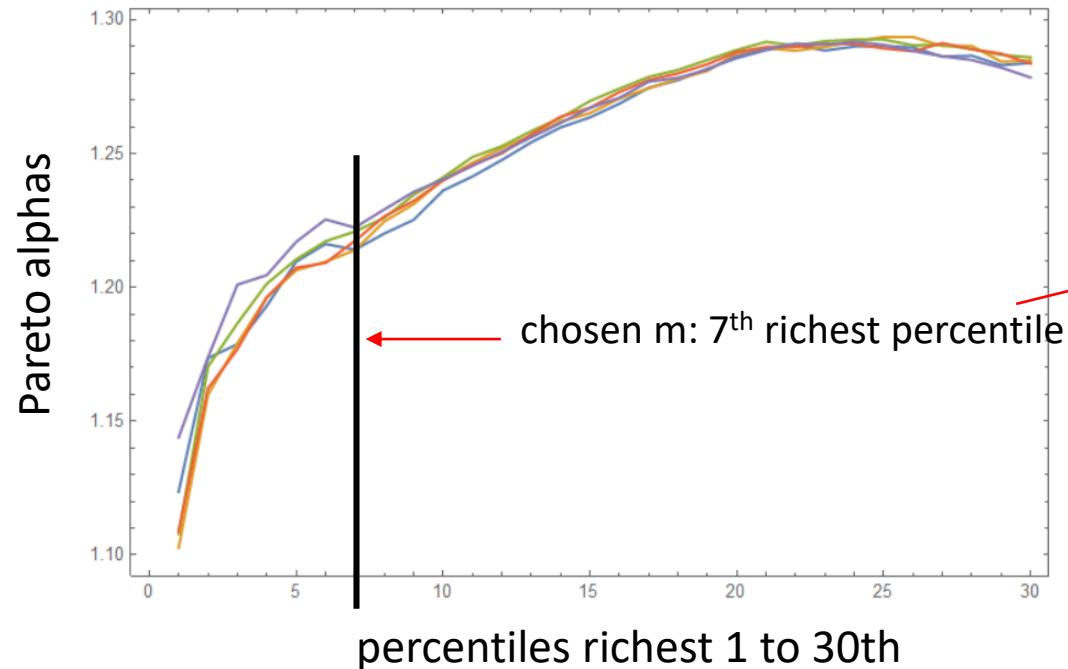
- “Wealth taxes would yield minimum revenues and distort the economy”
- Example of Austria:
 - estimating revenue of a wealth tax
 - data: Household Finance and Consumption Survey (HFCS)

The Pareto Method in Practice: Some Details

- **Estimation (Clauset et al. 2009):**

1. Estimation of distribution parameter α for various m
2. Test whether the resulting distributions fit the data reasonably well (Cramer-von-Mises-Test)
3. Choose the m with the best fit (i.e. lowest test statistic)

- $\alpha = 1.2177$ and $m = 626,000\text{€}$ (7th richest percentile)



HFCs: The Austrian Case

summary statistics original data

- median: 86,000 €
- mean: 258,000 €
- total wealth: 998 bn. €
- top 1% share: 25%
- bottom 50%: 3.2%
- richest obs: 41 mio. €

summary statis Pareto corrected data

- median: 86,000 €
- mean: 341,000 €
- total wealth: 1,317 bn. €
- top 1% share: 41%
- bottom 50%: 2.5%
- richest obs: capped 1 bn €

HFCS: The Austrian Case

Original Data

Percentile	Total wealth in Percentile	Average wealth in percentile
91	€ 20,822,789,219	€ 529,606
92	€ 21,274,388,242	€ 562,269
93	€ 23,273,639,040	€ 604,246
94	€ 25,703,410,726	€ 658,576
95	€ 29,445,091,186	€ 759,053
96	€ 32,969,286,315	€ 847,449
97	€ 37,378,504,791	€ 980,399
98	€ 47,125,664,840	€ 1,218,196
99	€ 62,361,063,542	€ 1,618,187
100	€ 254,522,764,362	€ 6,703,743
	€ 998,129,766,372	

Pareto Based Estimates

Percentile	Total wealth in Percentile	Average wealth in percentile
91	€ 21,106,279,712	€ 544,031
92	€ 22,728,844,332	€ 581,599
93	€ 23,793,644,803	€ 626,885
94	€ 27,179,055,491	€ 702,909
95	€ 31,142,721,475	€ 801,905
96	€ 35,184,353,525	€ 904,206
97	€ 41,566,792,448	€ 1,074,065
98	€ 53,533,086,856	€ 1,390,025
99	€ 76,892,240,929	€ 2,013,261
100	€ 533,985,842,784	€ 14,045,856
	€ 1,317,478,884,304	

<p>Linear Modell I allowance: 500,000 Euro tax rate: 1%</p>
<p>Linear Modell II Allowance: 1 Million Euro Tax rate: 1%</p>
<p>Progressive Model I Allowance: 1 Million Euro Tax rate: 1-2 million: 0.3% > 2 million; 0.7%</p>
<p>Progressive Model II Allowance: 700.000 Euro Tax rate: 700.000-2 Mil.: 0.5% 2 -3 million; 1% > 3 million: 1.5%</p>

<p>Progressive Steuer III Allowance: 1 million Euro Tax rate: 1-2 million: 0.7% 2-3 million; 1% > 3 million: 1.5%</p>
<p>Progressive Model IV Allowance: 2 million Euro Tax rate: 2-10 million: 1% 10-100 million; 1.5% > 100 million: 4%</p>
<p>Progressive Model V Allowance: 1 million Euro Tax rate: 1-10 million: 0.5% > 10 million: 1%</p>

	in million €	Original Data	Pareto Corrected Data		
			no evasion	weak evasion	strong evasion
linear model I		3,623	6,744	5,027	4,513
linear model II		2,494	5,523	4,234	3,803
Progressive I		1,464	3,511	2,713	2,438
Progressive II		3,174	7,469	5,726	5,141
Progressive III		3,051	7,355	5,663	5,084
Progressive IV		2,018	8,320	6,277	5,581
Progressive V		1,728	4,192	3,205	2,873