Distribution and Growth Workshop Reykjavik September 2019

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Outline

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Part 1: Distribution within countries

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Definitions

Part 1: Distribution within countries Definitions



Income vs Wealth

- **income**: flow of money streams over a time period (e.g. a year)
- (net) wealth: stock of assets (net of liabilities) at a certain point in time (e.g. end of year)
- what drives wealth (mechanics):
 - income not used for consumption (i.e. savings, flow) accumulates into assets (stocks)
 - level of income and income taxes
 - capital gains on existing assets (revaluations in national accounts)
 - inheritance/bequests

Part 1: Distribution within countries

L The distribution of wealth: The last 100 years

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Part 1: Distribution within countries

L The distribution of wealth: The last 100 years



Top 0.1% Wealth Share in the United States, 1913-2012

The figure plots the share of total household wealth owned by the richest 0.1% of families in the United States from 1913 to 2012. The unit is the family (either a single person aged 20 or above or a married couple, in both cases with children dependents if any). The top 0.1% is defined relative to the total number of families in the population. In 2012, the top 0.1% included about 160,000 families with a net wealth above \$20.6 million. Source: Saez and Zucman

(2016)

Part 1: Distribution within countries

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Top Wealth Shares in the United States, 1913-2012

Panel B plots the top 1% and next 9% wealth shares in the United States from 1913 to 2012. For our estimates, the unit is the family (single adult person aged 20 or more, with or without children dependents, or married couple with or without dependents). For the SCF, the unit is the household (a household can include several families) and wealth includes durables such as cars but excludes defined benefit funded pensions.

Source: Saez and Zucman (2016)

Part 1: Distribution within countries

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Figure 4: Top 1% wealth share in emerging and rich countries

This figure compares the top 1% wealth share across countries. Estimates are obtained by combining tax data, survey data, and household balance sheets. The unit of observation is the adult individual with wealth equally split among married couples. Source: Zucman (2019)

Part 1: Distribution within countries

L The distribution of wealth: The last 100 years





This figure compares the top 10% wealth share across countries. Estimates are obtained by combining tax data, survey data, and household balance sheets. The unit of observation is the adult individual with wealth equally split among married couples. Source: Zucman (2019)

Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Part 1: Distribution within countries Theory: What drives wealth inequalities

Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Theory: What drives wealth inequalities I

How does an unequal distribution emerge?

precuationary saving models:

some households become unemployed and have to "eat up their savings" (Aiyagari, 1994; Carroll, 1997; Nardi & Fella, 2017)

bequest motives:

precautionary saving models + bequests stop households from eating up too much wealth (DeNardi, 2004; DeNardi & Yang, 2016)

heterogeneous preferences:

exogenous preference for wealth accumulation or risk aversion (Krusell & Smith, 1998; Hendricks, 2007)

Part 1: Distribution within countries

-Theory: What drives wealth inequalities

Theory: What drives wealth inequalities II

skewed earnings risk:

rich households face larger drops in income and thus save more (Castaneda, Diaz-Gimenez, & Rios-Rull, 2003)

heterogeneous rates of return: if rates of return on savings depends on accumulated wealth then the rich become richer (Benhabib, Bisin, & Zhu, 2011; Benhabib, Bisin, & Luo, 2019; Gabaix, Lasry, Lions, & Moll, 2016)

Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Theory: What drives wealth inequalities III

explain changes over time

- income distribution
- taxation
 - income taxation
 - inheritance / wealth taxation

Session 5: The Distribution of Wealth Part 1: Distribution within countries Theory: What drives wealth inequalities

Income Taxation





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 Generalisee. Source: Piketty and Saez (2013)

Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Income Taxation

 Saez and Zucman (2016) argue unequal income distribution and differences in saving rates drive wealth inequality Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Inheritance

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.

Luck

- if income varies randomly (e.g. stock market returns) and wealth can be inherited . . .
- ► then the distribution of wealth becomes fairly unequal over time
- basic mechanism
 - extraordinary luck generates extraordinary wealth
 - inheritance allows luck to accumulate
 - (+ "Mathew effect" (affluent households enjoy higher returns due to scale and/or power) speeds up this process)

Session 5: The Distribution of Wealth Part 1: Distribution within countries Theory: What drives wealth inequalities

Luck: A simulation

- Population N = 10,000 agents and simulate for T = 200 periods
- each agent *i* starts in round t = 0 with wealth $w_{i,0} = 10$
- each round each agent faces a return on their wealth of $r_i \sim N(1.04; 0.07)$
- What kind of wealth distribution emerges after 200 rounds?



Session 5: The Distribution of Wealth Part 1: Distribution within countries Theory: What drives wealth inequalities

Luck: A simulation

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

Part 1: Distribution within countries

L Theory: What drives wealth inequalities

Luck: A simulation

- Why is this interesting?
- interpretation
 - starting from complete equality
 - everybody has same returns up to stochastic variation
 - BUT: extraordinarily lucky agents benefit from unusually high draws (returns)
 - AND: inheritance (i.e. same agent "lives for 200 periods") allows to accumulate luck
- $\blacktriangleright \rightarrow$ equal starting condition yields striking inequalities (so equality needs to be constantly restored)
- See: Yakovenko and Rosser (2009)

Part 2: Distribution between countries

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Global Distribution of Income and Wealth

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Global Distribution of Income and Wealth

Global Income Distribution

- Industrialized countries represent a declining share of the global economy
- Global income distribution equalizes (mainly due to China + India)
- There is the phenomenon of the "squeezed" global middle class (i.e. bottom 90% of the West): Elephant Graph!

Part 2: Distribution between countries

Global Distribution of Income and Wealth



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Session 5: The Distribution of Wealth

Part 2: Distribution between countries

Global Distribution of Income and Wealth





Here come the elephants! Source: Lakner and Milanovic (2015)

Notes: Y-axis displays the growth rate in average income of the fractile group (in 2011 PPP USD). Population-weighted. Growth incidence evaluated at ventile groups (e.g., bottom 5%); top ventile is split into top 1% and 4% between P95 and P99. The horizontal line shows the growth rate in the mean of 26.74% (1.19% p.a.).

Source: Authors' analysis based on data described in the text.

Part 2: Distribution between countries

Global Distribution of Income and Wealth



Source: Alvaredo, Chancel, Piketty, Saez, and Zucman (2018)

Income group (percentile)

Part 2: Distribution between countries

Global Distribution of Income and Wealth

What about the global wealth distribution?

Part 2: Distribution between countries

Global Distribution of Income and Wealth





Source: Zucman (2019)

Notes: This figures shows the evolution of global wealth inequality, proxied by wealth inequality in China plus Europe plus the United States. The wealth threshold for an individual to be part of the Top 1% richest in China plus Europe plus the United States is 1,125,000 euros. Source: World Inequality Database (Alveracio et al., 2018).

Part 2: Distribution between countries

Global Distribution of Income and Wealth



Figure 7: Global wealth growth by percentile, 1987-2017(China + Europe + United States)

Source: Zucman (2019)

Notes: This figures shows the growth of wealth per adult by quantile of the global wealth distribution over the period 1987-2017. Global wealth inequality is proxied by wealth inequality in China plus Europe plus the United States. Source: World Inequality Database (Alvaredo et al., 2018).

Part 3: Conclusion

- 1. Wealth (and income inequalities) extremely high (within countries)
- 2. Serious about (re)introducing wealth and inheritance taxes and progressive income taxation (short run)
- 3. For next session: If wealth is accumulated past income, it is accumulated emissions

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