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Outline

1. History of thought on distributional issues in economics
2. Inequality in the long run: labor vs. capital
3. Measuring inequality: current issues
4. The effect of taxes and transfers on inequality
   - Fiscal Income and Imputed National Income
   - Imputed National Income: Methodology for Retained Earnings
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1. Distributional issues in economics

Economics in the 1950s-1980s: almost entirely about efficiency

- Inequality at historically low level
- Cold War context → key question: are market economies better than planned economies at allocating resources
- Lots of progress made: fundamental theorems of welfare economics; market failures; government failures; etc
Economics in the 19\textsuperscript{th}, 20\textsuperscript{th} and 21\textsuperscript{st} century: inequality at the center stage

- Key question: do market economies tend to generate unsustainable inequality?
- What are the forces that push toward equality? Inequality?
- Less progress made than on the efficiency front: lack of good data; limited heterogeneity in workhorse models; identification challenges
- The following brief history of distributional issues in economic thought adapted from Piketty (2014, chapter 1)
Thomas Malthus

- Model: population grows $\rightarrow$ labor supply increases $\rightarrow$ wages fall to subsistence levels ("iron law of wages")
- Prediction: misery for the masses, revolution
- Policy recommendation: limit population growth
- Problem: did not anticipate modern economic growth
Who benefits from unbiased \textit{TFP} growth?

1. \textbf{Production:} \( Y = AF(K, L) \)

   \[
   dY = F(K, L)dA + AF_K dK + AF_L dL \tag{1}
   
   \Delta Y = \Delta A + s_K \Delta K + s_L \Delta L \tag{2}
   
   \text{where } A \text{ is total factor productivity, } \Delta X \text{ denotes a percentage change in } X, \ s_K \equiv \frac{F_KK}{Y}, \text{ and } s_L \equiv \frac{F_LL}{Y}.

2. \textbf{Income:} \( PY = RK + WL \)

   \[
   \Delta P + \Delta Y = s_K (\Delta R + \Delta K) + s_L (\Delta W + \Delta L) \tag{3}
   
3. \textbf{Incidence:}

   Rearranging equation (3) and substituting the expression for \( \Delta Y \) from equation (2) yields:

   \[
   \Delta A = s_K (\Delta R - \Delta P) + s_L (\Delta W - \Delta P) \Rightarrow \Delta W/P = 0 \tag{4}
   
   =0 \text{ if no capital}
   
   =0 \text{ if population adjusts}
Did Malthus have it backwards? $K$ not population adjusts

Who benefits from unbiased $TFP$ growth?

$$
\Delta A = s_K \left( \Delta R - \Delta P \right) + s_L \left( \Delta W - \Delta P \right) \Rightarrow \frac{\Delta W}{P} = \frac{\Delta A}{s_L}
$$

$= 0$ if capital adjusts

Real wages
David Ricardo

- *Principles of Political Economy and Taxation*, 1817
- Model: fixed land supply, rising population → land rents and prices bound to rise ("scarcity principle")
- Prediction: land-owners will capture an ever growing fraction of national income
- Policy recommendation: tax land, open up to foreign agricultural products (→ repeal of the corn laws, 1846)
- Problem: did not anticipate improvement in agric. productivity
Karl Marx

- *Das Kapital* vol. 1, 1867
- Model: convex saving rate ("Accumulate, accumulate, it’s Moses and the prophets")
- Prediction #1: Ever growing share of income captured by capitalists → workers’ revolution
- Prediction #2: Fall in rate of return to capital → infighting among capitalists (Lenin, Imperialism, the Highest Stage of Capitalism)
- Policy recommendation: communism
Simon Kuznets

- *Shares of Upper Income Groups in Income & Saving*, 1953
- First large-scale scientific use of data to study inequality and growth, using national accounts and tax returns
- Model: two-sector model of the transition from agriculture to industry
- Prediction: inequality follows an inverse-U (∩) over path of development
- Problem: Over-estimated equalizing power of growth
Classical economists: under-estimated equalizing power of growth; Kuznets: over-estimated it

Today we can ask the same questions they did, but with more & better data and theories:

- International and historical data on income and wealth
- Rigorous models of inequality
- Modern evaluation tools to assess effect of policies
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2. Inequality in the long run: labor vs. capital

There are two sources of income: labor and capital

- Aggregate income $Y = F(K, L) = Y_L + Y_K$
- Individual factor income $y_i = y_{Li} + y_{Ki}$
Income inequality depends on:

- Distribution of $y_L \rightarrow$ race between education and technology, unions, minimum wage, labor taxation ...
- Distribution of $y_K \rightarrow$ inheritance, saving rates, rates of return, capital controls, capital taxation, ...
- Factor shares $\alpha = Y_K/Y$ and $1 - \alpha \rightarrow$ technology, bargaining power, competition policy, globalization...
- Joint distribution of labor and capital income
Several ways in which income inequality can be high:

- “Supermanagers society”: high inequality of labor income = US in 1990s
- “Rentier society”: high ineq. of wealth, inherited = Europe in 1913
- “Robber baron society”: high inequality of wealth, self-made = US in 1913
- Combination of the above: increasingly so the US today (see Lakner and Atkinson, 2015, on changes in US copula over time)
Figure VIII
The Capital Share across the Distribution

Source: Piketty, Saez and Zucman (2018)

- **Labor**
  - Wages (includes Form 1040 wages, salaries, and tips; imputed unreported wage compensation; payroll taxes; imputed nontaxable employee benefits like employer-provided health insurance; a portion of sales and excise taxes; and a portion of pension income)
  - 30% of mixed income (i.e., partnership and sole prop income, which includes imputed unreported business income, a portion of sales and excise taxes, and a portion of corporate taxes)
  - 0% of S-corporation income

- **Capital**
  - 100% of S-corporation income plus C-corp dividends and imputed retained earnings (which includes a portion of sales and excise taxes, and a portion of corporate taxes)
  - Other capital income (includes interest, imputed underreported interest income, rents, imputed rental income (including imputed rent from owner-occupied housing), a portion of sales and excise taxes, and a portion of pension income)
Since the early 2000s, many studies estimating top income shares in the long-run (e.g., Piketty and Saez (2003) for the US; see Atkinson, Piketty & Saez (2011) for a survey)

- Following up on Kuznets (1953), with more years and countries
- Combine tax data, Pareto-interpolation techniques, and national accounts to estimate shares of income going to top groups
- Data available in the World Wealth & Income Database: http://WID.world
Two main limits of top income share studies:

**Limit 1:** fiscal income data (i.e., income on tax returns) miss a large and growing fraction of income → large disconnect between inequality and macro

- In all countries, miss most capital income (tax exempt; tax evasion); sometimes miss some labor income too
- Implies substantial uncertainty on level and trend of inequality

**Limit 2:** silent about distribution of after-tax-and-transfer income

→ Current research frontier = bridging inequality/macro gap; measurement of capital inequality; impact of taxes and transfers

Also assessing current approaches and coming up with new ways to overcome missing data issues
The share of capital and labor in national income

Source: Piketty, Saez and Zucman (2018)
From taxable to total labor income

Source: Piketty, Saez and Zucman (2018)
From taxable to total capital income

% of national income

- Nonfilers & other
- Retained earnings
- Corporate income tax
- Income paid to pensions & insurance
- Imputed rents + property tax

Dividends, interest, rents & profits reported on tax returns

Source: Appendix Table I-S.A8.

Source: Piketty, Saez and Zucman (2018)
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Key problem in the study of inequality: lack of data on capital side (which is key in the long run)

- No wealth tax in most countries
- Survey data generally fail to capture wealthy individuals
- Literature uses indirect method; none is perfect:
  - Estate multiplier method
  - Income capitalization method
Estate multiplier method

- Start with wealth-at-death reported on estate (or inheritance) tax returns
- Compute mortality rate by age and gender
- Then weight wealth-at-death by inverse of mortality rate
- Popular because of availability of estate tax data: Mallet (1908), Seailles (1910), Strutt (1910), Stamp (1919), Lampman (1962), Atkinson and Harrison (1978), Piketty, Postel-Vinay, Rosenthal (2004), Kopczuk and Saez (2004); Garbinti, Goupille, Piketty (2017); Alvaredo, Atkinson, Morelli (2017)
Limits of estate multiplier method

Limit #1: differential mortality by wealth group
- Hard to estimate; can vary over time

Limit #2: death is not a random event
- Approach of death affects behavior: labor supply, investment strategy, health spending, gifts, tax planning...
- Illustration of the bias in the case of the US, matching estates and income tax data
The figure depicts the top 0.1% taxable capital income share (including realized capital gains) in (i) the SOI income tax data; (ii) the sample of decedents weighted using the Kopczuk-Saez (2004) estate multiplier weights.

Source: Saez and Zucman (2016)
Income capitalization method

- Start from capital income reported in personal income tax returns
- Compute rate of return on each asset class
- Multiply capital income by inverse of rate of return
- Limit: does not work well if taxable rates of return vary with wealth
- Saez and Zucman (2016): in US context, capitalization technique seems to deliver reliable results
- Suggests US experience very different than Europe's

More on this later in the slides
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.

Source: Saez and Zucman (2016)
Composition of the bottom 90% wealth share

% of total household wealth


Source: Saez and Zucman (2016)
Figure 1. Wealth concentration in France, 1800-2014 (wealth shares, % total wealth)

Source: Garbinti, Goupille, Piketty (2017)
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Governments tax and redistribute a big fraction of national income

- US: 1/3 of national income
- Europe: 40-50% of national income
- Developing countries: 5-30% of national income
- Strong correlation between development and size of gov.
Social Security spending

% of national income

Unemployment
Disability
Retirement

Individualized transfers (cash + in-kind)

Tax credits, safety net, other

Veterans

Medicaid

Medicare
Governments tax and redistribute a big fraction of national income

- Denote $z$ pre-tax income, $y = zT(z) + B(z)$ post-tax income.
- If inequality in $y$ is less than inequality in $z \leftrightarrow$ tax and transfer system is redistributive (or progressive).
- US tax and transfer system is overall redistributive: post-tax income is more equally distributed than pre-tax income.
- But redistribution of limited size and has not offset rise in pre-tax inequality.
Average annual growth by percentile, 1980-2014

Source: Piketty, Saez and Zucman (2016).
Who receives government transfers?

- Individualized transfers have increased a lot in the US since 1960s, because of rise in health transfers (+ Social Security)
- Middle-class & retirees have benefited the most from this increase
- Bottom 50% has benefited less: rise in Medicaid and EITC but collapse in safety net spending

→ Overall bottom 50% receives less transfers than middle class today
Average individualized transfer by post-tax income group (excluding Social Security)

% of average national income

Source: Appendix Table II-G4.
Government spending on safety net
(food stamps + SSI + temporary assistance)

% of national income

0.0% 0.2% 0.4% 0.6% 0.8% 1.0% 1.2% 1.4% 1.6%

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Two definitions of income

1. **Fiscal income** (Piketty and Saez 2003)
   - Form 1040 total income minus realized capital gains
   - Tax unit level of observation
   - **Pro:** Directly observed, well understood
   - **Con:** Missing non-taxable income, sensitive to tax rules

2. **Imputed national income** (Piketty, Saez, and Zucman 2018)
   - Fiscal income + imputed missing elements
     - Capital: retained earnings, owner-imputed rents, pension income
     - Labor: health insurance
     - Other: taxes and transfers (we focus on pre-tax, pre-transfer version)
   - Individual level of observation
   - **Pro:** Sums to national income
   - **Con:** Relies on imputation assumptions, hard to replicate