Economic History

Week 9: Pikketty and Inequality

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Plan for the Class

1. Who is Piketty?

2. Piketty's model

3. The Structure of Income Inequality

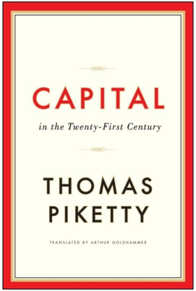
Who is Piketty?

Piketty and his research

- Piketty is an **Economist** that became popular in 2014
- His **book *"Capital in the XXI Century"*** [a] was a best seller
- The strength of his work is **data**

[a] The book follows his seminal paper: Piketty, T. and Zucman, G. (2014). "Capital is Back", *The Quarterly Journal of Economics*, Volume 129, Issue 3, August 2014, Pages 1255–1310.

Main ideas



- Economic inequality is rooted into **intrinsic forces of capitalism**
- Capitalism promotes **capital concentration**
- **Income inequality** results from **wealth distribution**, but also on labor income distribution
- Policy recommendation: a **global progressive tax on wealth**

Piketty’s model

From Solow to Piketty

- Piketty works within **Solow's theoretical framework**
- CRS production technology with decreasing marginal returns to inputs, represented by a **labor-augmented Cobb-Douglas** function:

$$F(K, L) = K^{\alpha}(AL)^{1-\alpha} \tag{1}$$

- The representative firm solves:

$$\max_{\{K,L\}} \quad \Pi = F(K, L) - wL - rK$$

The First Law of Capitalism

$$\frac{\partial \Pi}{\partial K} = 0 \Leftrightarrow \alpha \left(\frac{AL}{K}\right)^{1-\alpha} - r = 0$$

$$\Leftrightarrow \alpha = \left(\frac{K}{AL}\right)^{1-\alpha} r \frac{K^\alpha}{K^\alpha}$$

$$\Leftrightarrow \alpha = \frac{rK}{(AL)^{1-\alpha} K^\alpha}$$

$$\Leftrightarrow \alpha = \frac{rK}{Y}$$

$$\Leftrightarrow \boxed{\alpha = \beta r}, \qquad \beta \equiv K/Y \qquad (2)$$

- α is the **equilibrium share of Capital income** rK on total Output Y
- α is an **increasing function of** β
- For a given Y, the evolution of α will depend on the **elasticity of substitution** between K and L

A (perhaps overwhelming) technicality

- The **elasticity of substitution** is defined as:

$$\varepsilon_{K,L} \equiv \frac{\Delta\%(K/L)}{\Delta\% MRTS_{L,K}}$$

  with $MRTS_{L,K} \equiv MgP_L / MgP_K$

- Furthermore, **in an equilibrium** of a competitive market with profit maximizing firms, $MRTS_{L,K} = w/r$, which allows us to write:

$$\boxed{\varepsilon_{K,L} \equiv \frac{\Delta\%(K/L)}{\Delta\% w/r}}$$

But... That's not all...

- Remember that we are under the framework of a **labor-augmented technology**, which turns β into:

$$\beta = \frac{K}{Y} \Leftrightarrow \beta = \frac{K}{(AL)^{1-\alpha}K^{\alpha}} \Leftrightarrow \beta = \left(\frac{K}{AL}\right)^{1-\alpha} \Leftrightarrow \boxed{\beta = \tilde{k}^{1-\alpha}} \tag{3}$$

- And remember also that the model converges to a **steady-state for capital per worker** $\tilde{k}$:

$$\Delta\tilde{k}_{t+1} = \tilde{k}_{t+1} - \tilde{k}_t = 0 \Rightarrow s\,f(\tilde{k}) = (\delta + g + n)\tilde{k} \Leftrightarrow$$

$$s\,\tilde{k}^{\alpha} = (\delta + g + n)\tilde{k} \Leftrightarrow \boxed{\tilde{k}^* = \left(\frac{s}{\delta + g + n}\right)^{\frac{1}{1-\alpha}}} \tag{4}$$

The Second Law of Capitalism

- In the long run, therefore:

$$\beta = \frac{s}{\delta + g + n}$$

- Or, with some abuse of notation:

$$\boxed{\beta = \frac{s}{g}} \tag{5}$$

- For a constant savings' rate s, β **decreases with** g
- With **growth slow-down**, **capital-income ratio rises**

Capitalism Full Preversion

The **Two Laws of Capitalism** together

$$\boxed{\alpha = \bar{s}\,\frac{r}{g}} \tag{6}$$

- If $r \uparrow$ and $g \downarrow \Rightarrow \alpha \uparrow$
- For a given savings' rate s, α will be high if $r > g$
- As a matter of fact, **growth is slowing down and the pure rate of return going up** to its historical levels

The Structure of Income Inequality

The Empirics of Inequality

- Since 1970 the **top 10% income earners** get:
  - around **33% of total income** in France
  - a rising percentage from 33% to **50% of total income** in the US
  - around **22% of labor income** in France
  - a rising percentage from 31% to **45% of labor income** in the US
- Current **income inequality** results essentially from:
  1. **Wealth concentration**
  2. **Wages divergence**

The Emphasis on Wealth Concentration

- The top 10% wealthy people has around (a rising) **70% of the wealth**
- Wealth concentration is always **higher than income concentration** (explained by *dynamic dynasty models*)
- Wealth inequality **rises steeply if** $r > g$
- $r > g$ is the historical trend
- **Proposal**: a global progressive tax on wealth

Piketty by Himself

You may want to watch this TED Talk.