

# Fiscal Policy and Inequality

## 24. Inequality II

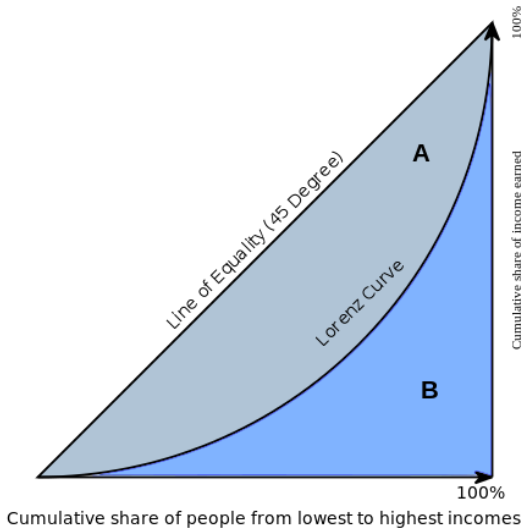
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# Milanovic (2013): Three Measures of Inequality

- ▶ Measure 1: Inequality between countries
  - ▶ Compare income per capita across countries
  - ▶ All countries receive equal weight
- ▶ Measure 2: Inequality between countries, weighed by population
  - ▶ Same as above, but now using population weights
- ▶ Measure 3: Global Inequality at the individual level
  - ▶ This measure goes beyond the nation-state
  - ▶ Focus on individuals, regardless of nationality

# Gini Coefficient



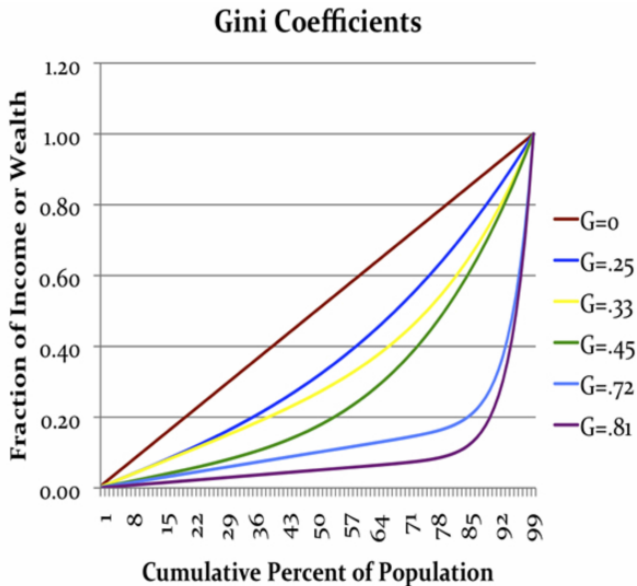
# Gini Coefficient

- ▶ Formula:

$$G = \frac{A}{A + B}$$

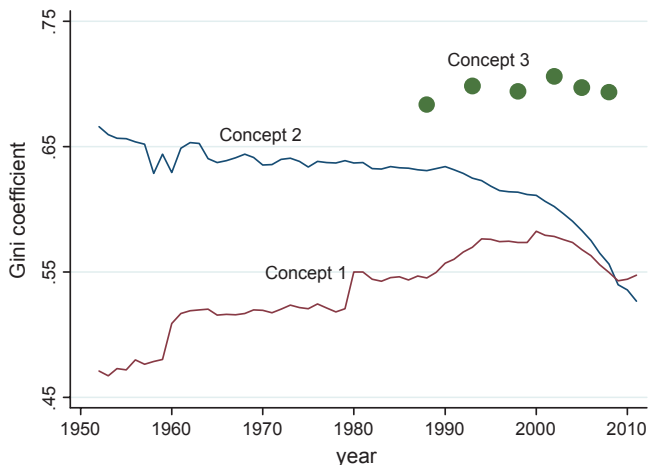
- ▶  $G = 0 \Rightarrow$  Complete Equality
  - ▶ Everyone has exactly the same income
- ▶  $G = 1 \Rightarrow$  Perfect Inequality
  - ▶ One person has all income

# Gini Coefficient



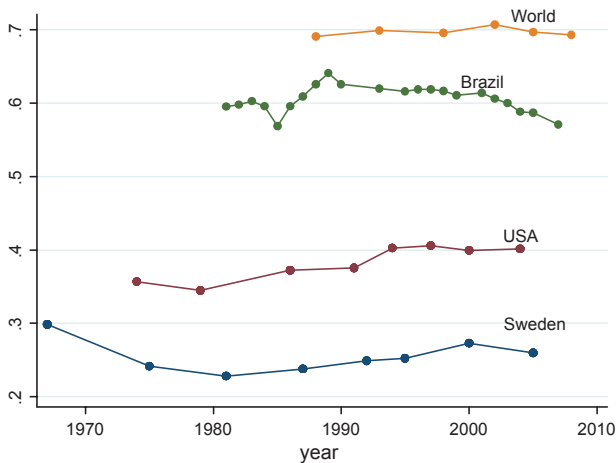
# Milanovic (2013): Global Inequality over Time

**Figure 2.** International and global inequality, 1952–2011: ‘the mother of all inequality disputes’.



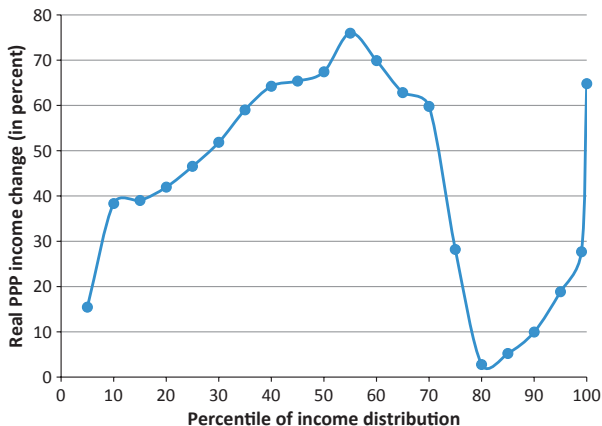
# Milanovic (2013): Inequality Across Countries

**Figure 3.** Global Gini coefficient compared to the Ginis of selected countries.



# Milanovic (2013): Winners and Losers, 1988-2008

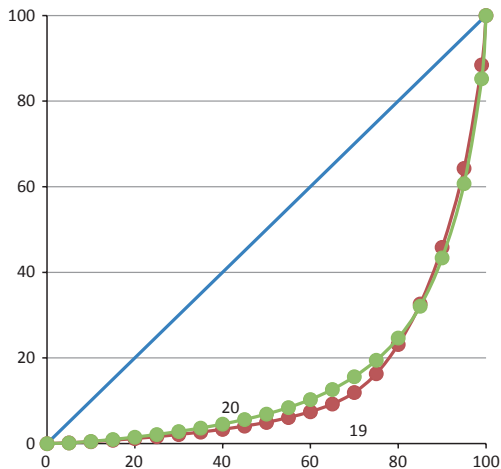
**Figure 4.** Change in real income between 1988 and 2008 at various percentiles of global income distribution (calculated in 2005 international dollars).





# Milanovic (2013): Global Gini, 1988 vs 2008

**Figure 5.** Lorenz curves for global income distributions in 1988 and 2008.

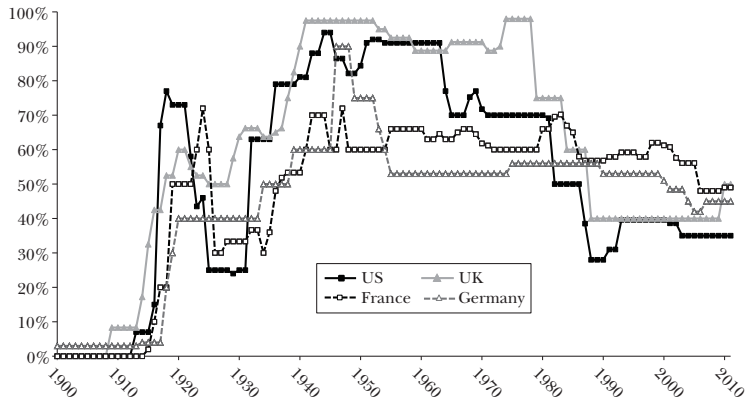


# Milanovic (2013): Factors Reducing Income Inequality

- ▶ Economic factors:
  - ▶ Equalization through trade
  - ▶ Equalization through migration
    - ▶ In practice, free movement of people much more limited than free movement of goods
- ▶ Public policy intervention:
  - ▶ Taxes on high-income/high-wealth individuals
  - ▶ Transfers to low-income individuals: CCT, EITC
    - ▶ Underlying these policy choices (often, not always): equity-efficiency trade-off

# Tax Policies (at the top) Across Countries

Top Marginal Income Tax Rates, 1900–2011

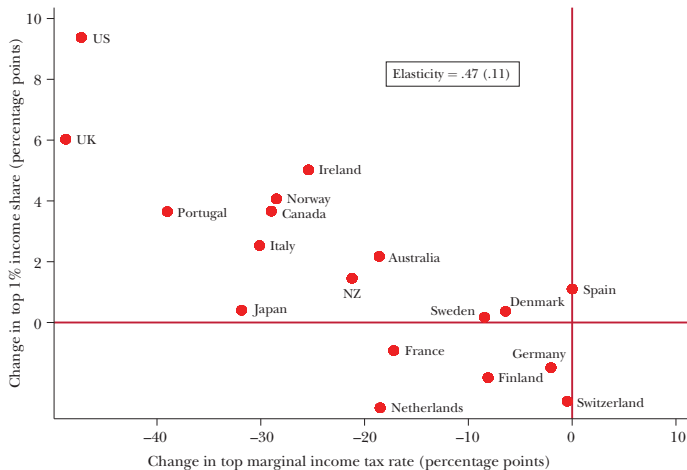


Source: Piketty and Saez (2013, figure 1).

# Tax Policies vs. Changes in Inequality

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

*(combining both central and local government income taxes)*



Source: Alvaredo, Atkinson, Piketty and Saez (JEP, 2013)

# What Determines Pay for Top Executives?

- ▶ The drop in top marginal tax rates has increased the bargaining power of the highest income earners
  - ▶ They have more to gain from an increase in their gross pay
- ▶ Under this hypothesis, not clear that cuts in top rates lead to more economic growth
  - ▶ Resources not allocated optimally
  - ▶ How do we calculate the marginal product of a CEO?

# Piketty (2014): Data Collection

- ▶ Income data:
  - ▶ Long series of tax return data for UK, France, US, Japan and a few other advanced countries
  - ▶ Income Tax was only established in UK, US, France in 1909-1914
- ▶ Wealth data:
  - ▶ Estate tax and/or inheritance tax records
    - ▶ Available for fewer countries, but sometimes extends back to 18th Century
  - ▶ National balance sheet data for capital/income ratio
  - ▶ 19th Century novels (Balzac, Jane Austen)

# Piketty (2014): Dynamics of Wealth Distribution

- ▶ Forces of convergence:
  - ▶ Innovation and diffusion of knowledge
- ▶ Forces of divergence:
  - ▶  $r > g$ : capital's annual rate of return is larger than the overall rate of economic growth
    - ▶ Inherited wealth grows faster than incomes and output
    - ▶ Marxist logic: capital's share of national income rises steadily
  - ▶ Steady increase in income inequality within countries (top 1%)
    - ▶ Mainly present in the U.S.

# Piketty (2014): “Fundamental Laws”

- ▶ First Law:  $\alpha = r \times \beta$ 
  - ▶  $r$  = rate of return on capital,  $\beta = \frac{K}{Y}$  is the capital-income ratio,  $\alpha = \frac{rK}{Y}$  is capital's share of national income
  - ▶ Notice that, in algebraic terms:

$$\frac{rK}{Y} = r \times \frac{K}{Y}$$

- ▶ This is just an accounting identity...
  - ▶ Example: if  $\beta = 600\%$  and  $r = 5\%$ , then  $\alpha = r \times \beta = 30\%$



# Piketty (2014): “Fundamental Laws”

- ▶ Second Law:  $\beta = \frac{s}{g} \iff s = \beta \cdot g$ 
  - ▶  $g$  = rate of growth of output,  $\beta = \frac{K}{Y}$  capital-income ratio,  $s$  savings rate out of national output (net of depreciation)
  - ▶ Derivation:

$$\begin{aligned} \text{savings} = sY &= K_{t+1} - K_t \\ &= \left( \frac{K_{t+1}}{Y_{t+1}} Y_{t+1} \right) - \left( \frac{K_t}{Y_t} Y_t \right) \\ &\approx \frac{K}{Y} (Y_{t+1} - Y_t) \end{aligned}$$

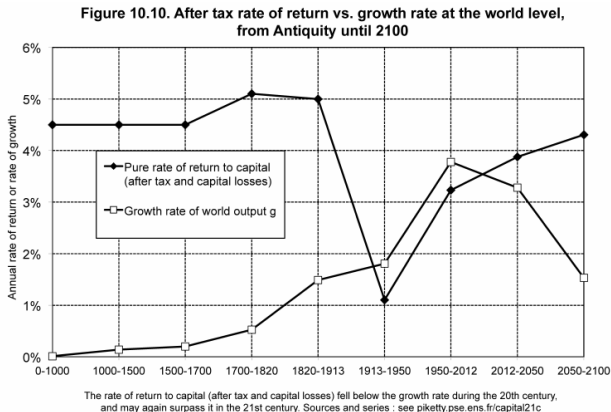
- ▶ Then, dividing both sides by  $Y$ :

$$\begin{aligned} s &= \frac{K}{Y} \left( \frac{Y_{t+1} - Y_t}{Y_t} \right) \\ s &= \beta \cdot g \end{aligned}$$

# Piketty (2014): “Fundamental Laws”

- ▶ Third Law:  $r > g$ 
  - ▶ In words: “The rate of return on capital systematically exceeds the overall rate of growth of income”
  - ▶ Empirically true for most of history, according to Piketty’s data
  - ▶ Also true in most standard growth models (eg, Solow, Harrod-Domar), but it depends on each model’s assumptions

# Piketty (2014): $r$ vs. $g$ in Historical Perspective



Source: Piketty (2014)

## Piketty (2014): Main Conclusions

- ▶ Using historical sources and a basic theoretical framework, Piketty argues that forces of divergence are likely to dominate over forces of convergence
  - ▶ *As long as* there is no policy intervention
  - ▶ In some cases (eg, Interwar period) forces of convergence might prevail
- ▶ Combining these factors with the “secular stagnation” hypothesis, Piketty predicts an increase in inequality in the 21st Century
  - ▶ Low rates of economic growth ( $g$ ) make it more likely that we live in a world with  $r > g$
  - ▶ Capital/Income ratio and capital's share of national income could rise back to 19th Century levels

# Piketty (2014): Policy Recommendations

- ▶ Introduce a “global” tax on wealth
  - ▶ Piketty himself acknowledges that it will not happen
- ▶ Links to parts of this module:
  - ▶ What is the elasticity of taxable wealth?
    - ▶ Land cannot move, but stocks and IP can
  - ▶ Extensive margin responses, eg. migration
  - ▶ How to ensure all jurisdictions abide by the tax?

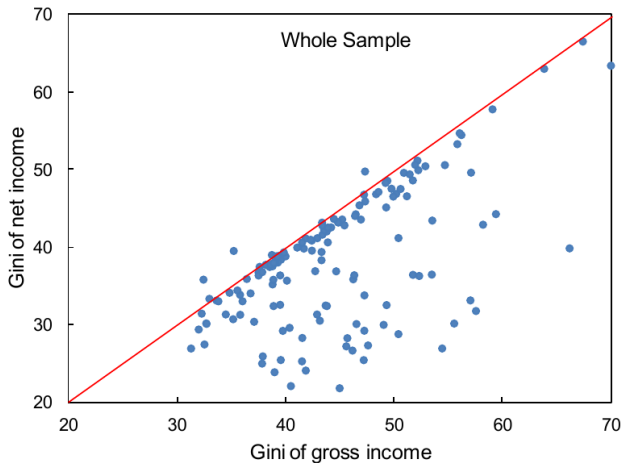
## IMF (2014): “Redistribution, Inequality & Growth”

- ▶ **Main result:** inequality negatively correlated with growth, and redistribution is not so bad!
- ▶ **Data:** use two measures of inequality
  1. Market inequality (*before* taxes & transfers)
  2. Net inequality (*after* taxes & transfers)
- ▶ Redistribution defined as  $R = \text{Gini}_{\text{Market}} - \text{Gini}_{\text{Net}}$
- ▶ Huge data effort to homogenize household surveys in many countries, done by Solt (2009)
  - ▶ Varying data quality by country

# IMF (2014): Results

1. More unequal societies tend to redistribute more
  - ▶ Strongest link among OECD countries
2. Lower net inequality is robustly correlated with faster and more durable growth (for a given level of redistribution)
3. Redistribution has a (weakly) positive impact on growth
  - ▶ Only in extreme cases there is some evidence of direct negative effects

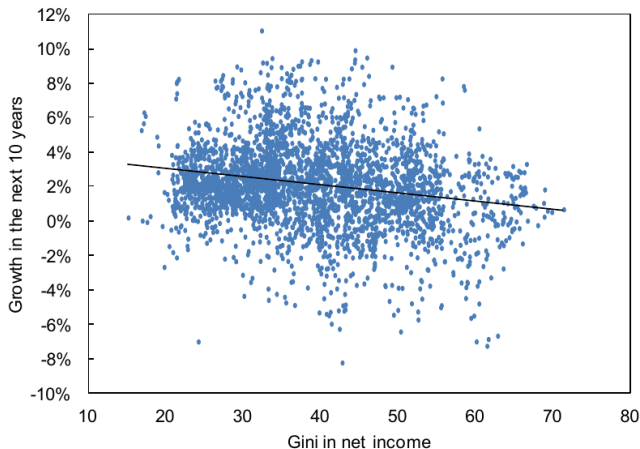
## Gross vs. Net GINI



Source: IMF (2014)

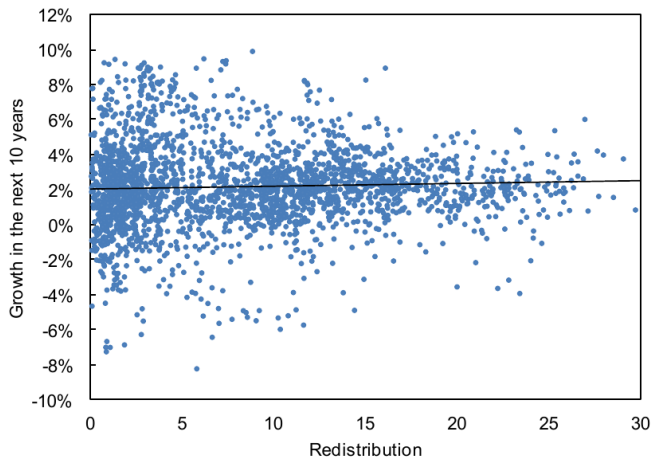


## Result 2: Inequality vs. Future Growth



Source: IMF (2014)

## Result 3: Redistribution vs. Future Growth



Source: IMF (2014)

## Result 2 & 3 in Regression Form

**Table 3. The effect of inequality and redistribution on growth 1/**

	Dependent Variable: growth rate of per capita GDP			
	Baseline	Baseline + controls		
	(1)	(2)	(3)	(4)
Log(initial income)	-0.0069** (0.0034)	-0.0081** (0.0035)	-0.0140*** (0.0037)	-0.0135*** (0.0046)
Net inequality	-0.1435*** (0.0444)	-0.0914*** (0.0336)	-0.0739*** (0.0266)	-0.1057** (0.0492)
Redistribution	0.0046 (0.0492)	0.0258 (0.0516)	0.0109 (0.0428)	0.0530 (0.0494)
Log(investment)		0.0241*** (0.0077)	0.0250*** (0.0084)	0.0076 (0.0125)
Log(population growth)		-0.0159 (0.0182)	-0.0215 (0.0174)	-0.0084 (0.0160)
Log(total education)			0.0206*** (0.0073)	0.0164* (0.0099)
Large negative terms of trade shock				-0.0424*** (0.0158)

## IMF (2014): *What* Redistribution Policies?

- ▶ Some win-win policies (*pseudo-consensus*):
  - ▶ Taxes on activities with negative externalities consumed mostly by the rich
  - ▶ Cash transfers to encourage school attendance by children in low-income households (CCTs)
  - ▶ Efficient spending on infrastructure, education, and health
- ▶ All of the above can increase *both* equity and efficiency
- ▶ Of course, many other redistributive policies face the standard equity vs efficiency trade-off.