

Economic Inequality and Income Distribution

Lecture 2/1

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Measurement of Income Inequality

- 4 criteria for inequality measurement:

Suppose that society is composed of n individuals, $i = 1, 2, \dots, n$. An income distribution is a description of how much income y_i is received by each individual i : (y_1, y_2, \dots, y_n)

- **Anonymity principle**: it does not matter who is earning income.

We can always arrange our income distribution so that

- $y_1 \leq y_2 \leq \dots \leq y_n$: arranging individuals to rank from poorest to richest

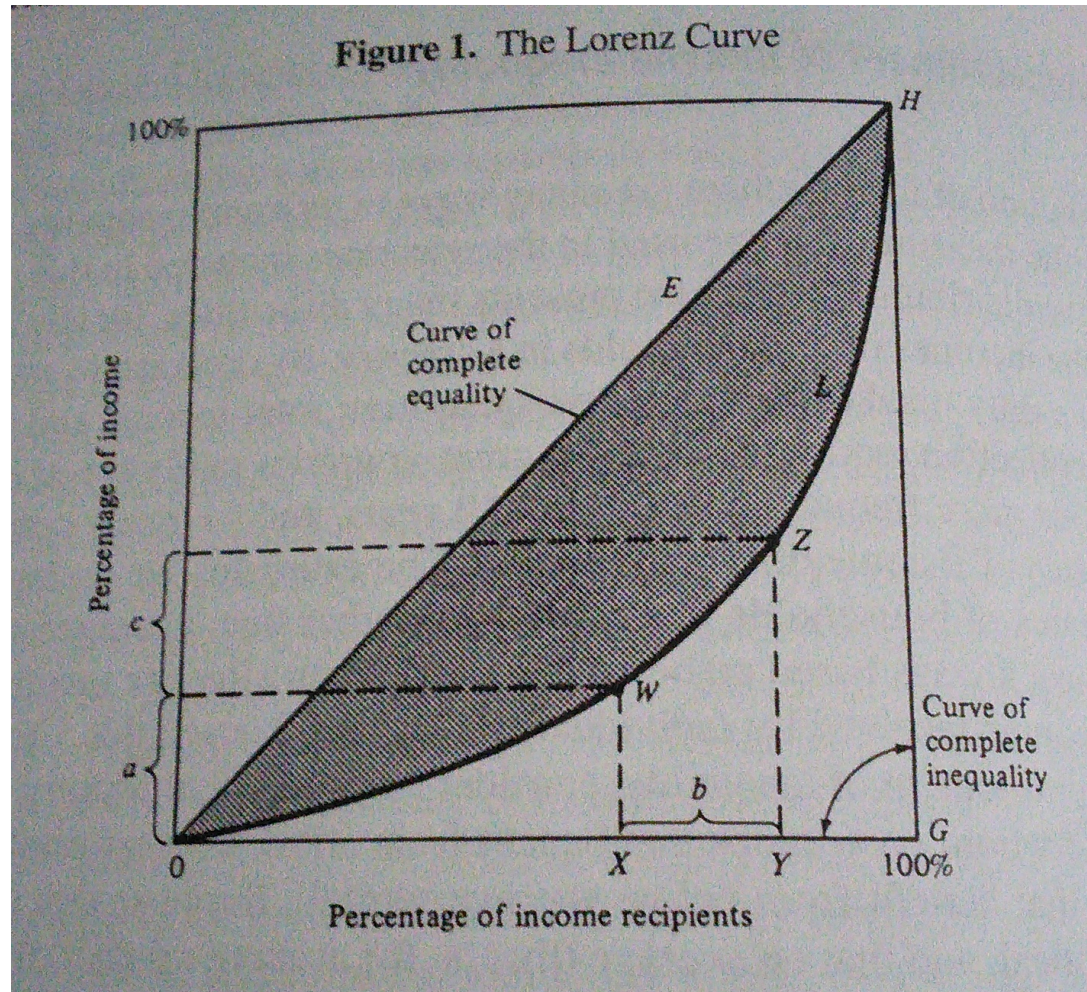
- **Population principle**: population size does not matter. All that matters are the proportions of the population that earn different levels of income.

- **Relative income principle**: only relative incomes should matter and the absolute levels of these incomes should not. This enables us to compare income distributions for 2 countries that have different average income levels.

Measurement of Income Inequality

- **The Dalton principle:** A transfer of income from the ‘not richer’ individual to the ‘not poorer’ individual will be called a regressive transfer. If one income distribution can be achieved from another by constructing a sequence of regressive transfers, then the former distribution must be deemed more unequal than the latter
- Popular measures:
 - The ratio of the share of income received by the 10th decile (richest 10 percent) of households (HH) to the share of income received by the first decile (poorest 10 percent) of HH (The Kuznets ratios).
 - use the richest 20 percent and the poorest 20 percent
 - Lorenz curve: plot the percentage of a country’s income received by the poorest x percent of HH against x.

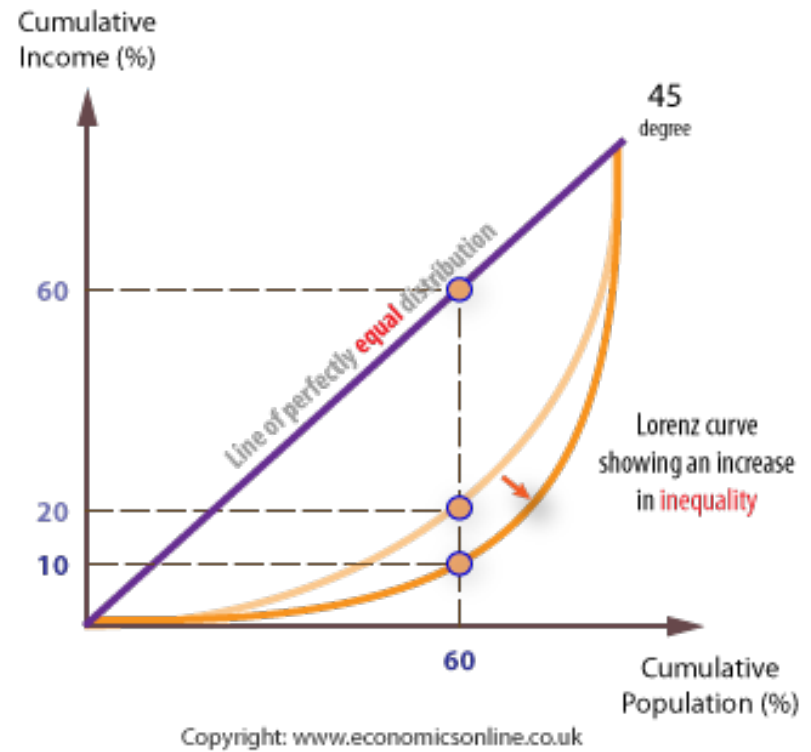
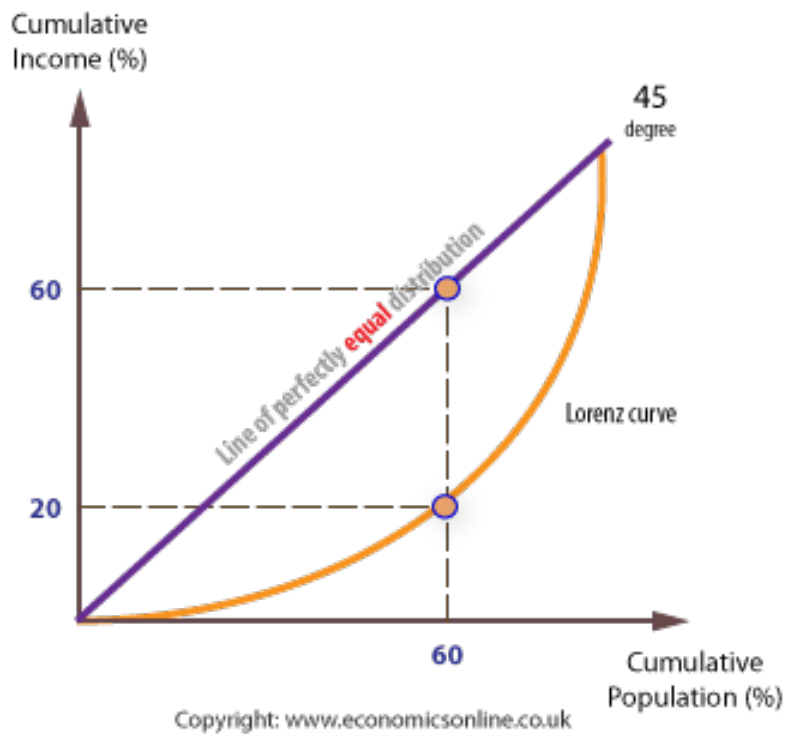
Measurement of Income Inequality



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- **Lorenz curve:**
 - OX percent of HH (the poorest group) receives a percent of income, and so on, giving the Lorenz curve L.
 - Complete equality occur only if a percent of HH received a percent of income, yielding the curve of E.
 - The curve of perfect inequality is OGH. One household has 100 percent of country's income.
 - The points on the Lorenz curve are the percentage of income received by the poorest 10 percent of HH, and so on.
 - Distribution α dominates distribution β if the Lorenz curve of α lies above that of another income distribution β for at least one point and never lies below it.
 - Lower inequality implies higher welfare.

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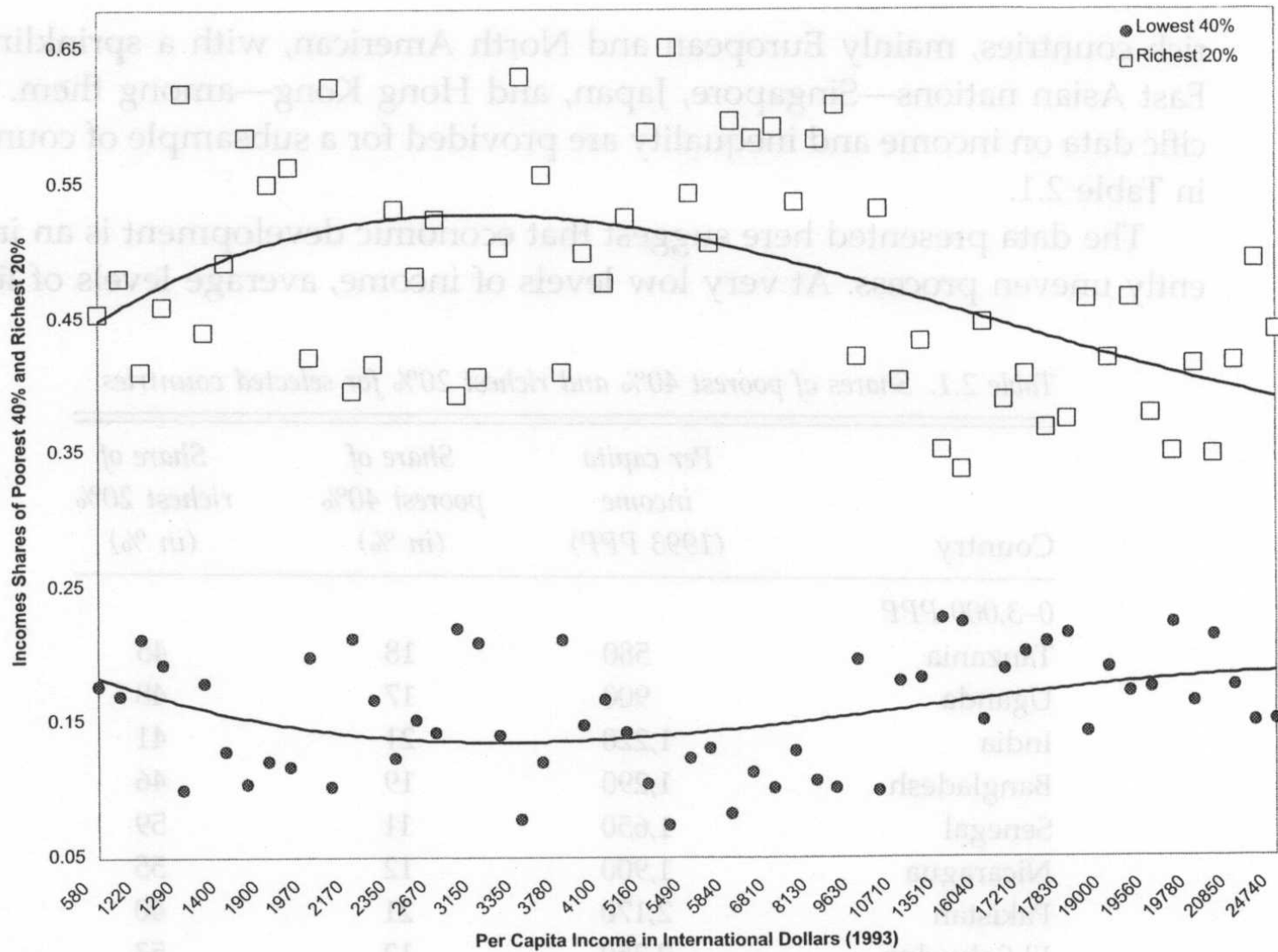
- Lorenz curves cannot be compared inequality of income distributions when the Lorenz curves cross.
 - use Gini coefficient
- **Gini coefficient**: the ratio of the shaded area, enclosed by the line of theoretical equality E and the observed Lorenz curve L, to the total area under the line of equality.
 - Gini coefficient ranges from 0 to 1.
 - The larger the coefficient, the greater the inequality.
 - If one income distribution Lorenz dominates another, its Gini coefficient will be smaller.

Inequality, income, and growth

- Inverted-U hypothesis
 - Kuznets (1955) used the ratio of the income share of the richest 20% of the population to that of the poorest 60% of the population as a measure of inequality
 - Result: developing countries tend to possess higher degrees of inequality than their developed counterparts.
 - Implication: economic development is fundamentally a sequential and uneven process. The process appears to pull up certain groups first and leave the other groups to catch up later. Hence, in the initial phase, inequality widens and later falls when everybody else catches up.
 - When plotting per capita income with some measure of inequality, the hypothesis suggests a plot that looks like an upside-down “U”

Inequality, income, and growth

- Testing Inverted-U hypothesis
 - Still lack of reliable data to track an individual country's inequality over time >> use cross section data instead
 - Pro: data can be obtained for different countries at widely different stages of development
 - Con: need a systematic way to control for intercountry variation



Income shares of poorest 40% and richest 20% for 57 countries

Source: World Development Report (1995), Deininger and Squire (1996)

- plot the latest years for which country-level data on inequality are available

Inequality, income, and growth

- Testing Inverted-U hypothesis

- Still lack of reliable data to track an individual country's inequality over time >> use cross section data instead
- Pro: data can be obtained for different countries at widely different stages of development

Con: need a systematic way to control for intercountry variation

- Ahluwalia (1976) analyzed 60 countries: 40 developing, 14 developed, 6 socialist. Divide the population of each country into 5 quintiles, then run the regression:

$$s_i = a + by + cy^2 + D + \text{error}$$

s_i is the income share of the i th quintile

y is the logarithm of per capita GNP

D is a dummy variable = 1 if the country is socialist

- the inclusion of the squared term permits a fit that changes direction

Inequality, income, and growth

- Comments on Inverted-U hypothesis
 - Problem with cross-sectional studies: the implicit assumption is that all countries have the same inequality-income relationship
 - Countries are different, but there is still some connection between their inequality-income curves >> do estimation by adding country-specific dummy variables that move the intercept term of the estimated curve (if we have time series data of inequality for each country).
 - “Latin effect”: most of the high-inequality middle-income countries are Latin American. Hence, the inverted-U is just an artificial consequence of the Latin American countries sitting in the middle.
 - There are many factors (policies, structural differences across countries) that are left out from the tests.
 - With panel data and country-specific dummies, the Kuznets inverted-U hypothesis largely vanishes: the coefficients are not significant.