

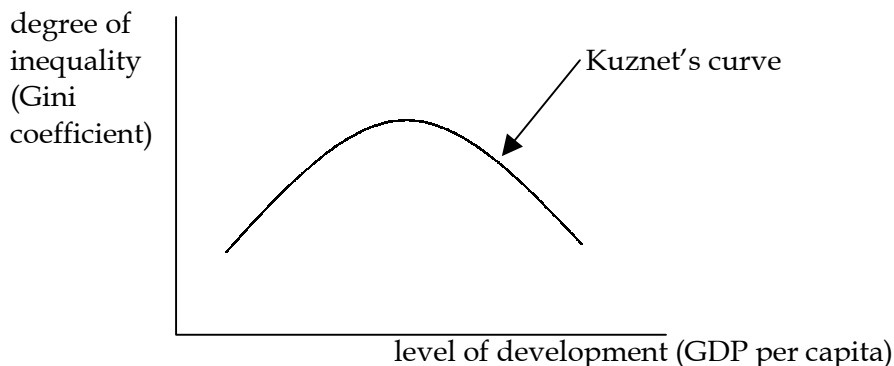
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- this chapter considers human welfare in a broader sense:
 - 1) income distribution
 - 2) incidence of poverty
 - 3) alternative measures of development: HDI, physical quality of life index
- development versus growth:
 - growth refers to an increase in the total output produced or an increase in the average output per person; however, just because growth occurs does not mean all people benefit
 - if inequality increases as growth proceeds then the incidence of poverty could increase; thus, how inequality changes with growth is important to consider
 - if average income is growing quickly and inequality is growing slowly, even the poorest can be better off; however, if growth occurs but inequality also grows quickly, then the poorest might not benefit
- inequality (equality) versus inequity (equity):
 - equality and inequality are positive terms – they can be considered apart from value judgements
 - equity and inequity are normative terms – they require a value judgement; there is controversy over the criteria for determining equity/inequity
 - if development has the goal of increasing living standards or reducing poverty then equality has to be considered, since it is a determinant of how much living standards improve for how many people
 - often, equality is taken into account because of an interest in equity
- equality and efficiency:
 - in the late 1970s Arthur Okun wrote *Equality and Efficiency : The Big Tradeoff* which argued that there was a trade-off between equality and efficiency
 - inequality might be necessary to motivate people; in this case, if government redistribution programs are too generous, then they will undercut people's incentives to work and invest
 - however, there is not always a trade-off between equality and efficiency – there are cases where greater equality leads to greater efficiency (as seen by greater growth):
 - 1) land reforms – if land is distributed more evenly then output grows; for example, if rich landowners hire workers to farm their land (a hacienda, for example), then dividing the land and giving it to the workers will often increase output, because the new owners work the land more intensively; thus, land reform both reduces inequality and improves efficiency
 - 2) education – if education is allocated by who can pay, then upper income groups will receive more education even if they are not the ones who have the aptitude to benefit most from education; redistributing educational dollars to those with the most potential would benefit society by reducing this misallocation
 - 3) political instability – high levels of inequality can lead to political instability (guerilla movements, civil wars, general strife) or detrimental government policy (powerful disaffected minorities can force interventions that are harmful to the economy)
 - 4) health care – we will return to this later in the course
 - some economists believe that welfare states are bad for efficiency; if so, inequality itself can create inefficiency because the government is forced to redistribute; for

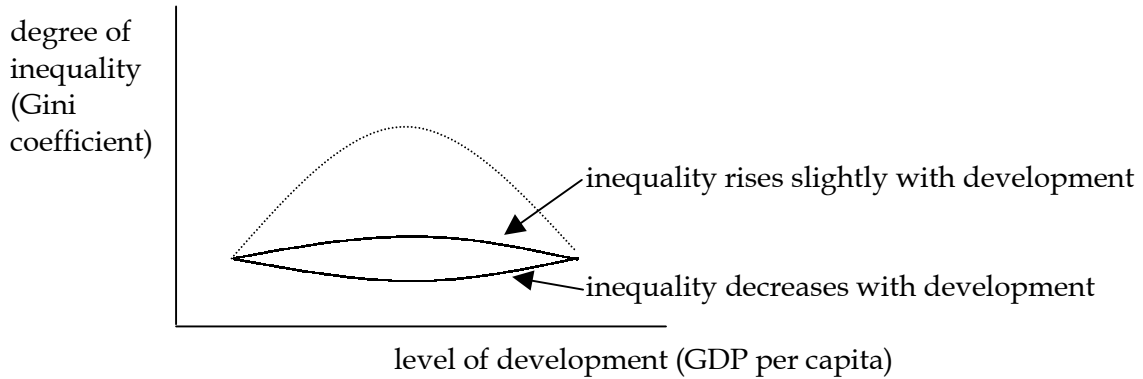
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example, Taiwan has relatively equal income and is not highly redistributive, in contrast to Brazil which has high inequality and pressure to intervene (which may thwart economic development)

- inequality, economic development, and the Kuznets curve:
 - until about 20 years ago it was believed that rising inequality necessarily accompanies economic development
 - the Kuznets curve (associated with Simon Kuznets) illustrates the idea that inequality (here measured by the Gini coefficient) increases with the level of economic development (here measured by the GDP per capita):



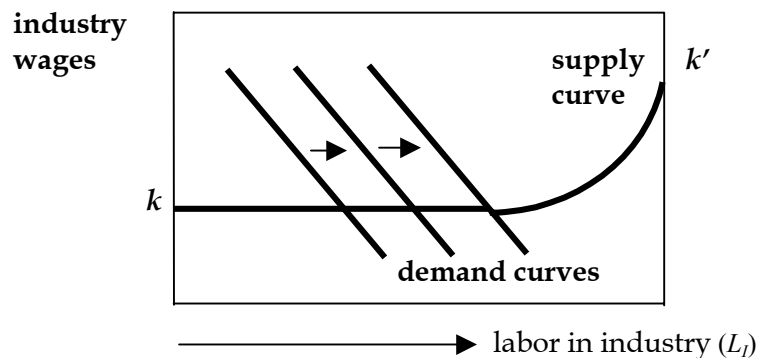
- 30-40 years ago it was observed that the poorest countries (Bangladesh, Congo, Papua New Guinea, etc.) had a more equal distribution of income (probably because almost everyone was poor), middle-income countries (Mexico, Brazil, etc.) had substantial middle- and upper-classes along with large numbers of poor (greater inequality), and the most industrialized countries (Sweden, Germany, etc.) had less inequality (because of widespread skills and productivity, as well as more redistribution)
- this observation suggests that inequality might be inevitable through the process of development - unless a country prefers to stay in poverty then it will have to suffer rising inequality; this helped justify the attitude in the 1950s and 1960s in development economics that rising inequality is not a concern
- studies at this time were cross-sectional (they compared different countries at the same point in time); if this cross-sectional data is predictive, then the trend of rising inequality should be observed in time-series data (observing the same country over time)
- time-series data did not support the hypothesis that inequality inevitably increases through the process of development; for example, Korea and Taiwan went through development without much inequality growth (inequality might even have declined due to land redistribution or public education); this might be illustrated as:



- moreover, there is little evidence that inequality in Mexico and Brazil is changing – thus, there is little support for the Kuznet’s curve as a predictor of an individual country’s dynamic path
- recent research on inequality and economic growth:
 - over the last ten years research has shown that a more equal distribution of income has actually been associated with more rapid economic growth
 - cross-country regression analysis uses the growth rate of GDP per capita as the dependent variable and initial GDP/capita, investment rate, Gini coefficient, etc. as the explanatory variable:

$$\text{growth rate of GDP per capita} = f(\text{initial GDP/capita, invest. rate, Gini coefficient, ...})$$

- studies find that countries with a lower Gini coefficient (less inequality) grew faster – this is contrary to the notion that inequality is necessary for growth; controlling for other factors shows that inequality is bad for growth; this could be related to political problems because conflict could harm growth, and also to the more efficient allocation of the gains from education, health care, etc., in countries with more equal income distribution
- why might economic development be associated with an increase in inequality?
 - the labor-surplus economy model illustrates why economic development might be associated with an increase in inequality
 - in the labor-surplus model most of the population lives on subsistence agriculture with a marginal productivity equal to or near zero; growth of the economy depends on growth of the industrial sector (the demand curves for labor shift right):



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- inequality might initially increase because:
 - industry pays a wage premium to workers hired away from agriculture, and industry will hire more and more of these workers
 - the growing capitalist class that owns industry might take part of the industrial profit as income, instead of investing it back into industry
- following this rise, inequality might decrease because:
 - as still more workers are drawn into industry, the wages in industry and agriculture eventually equalize
 - the monopoly power of the initial industrialists decreases as industry becomes more competitive
 - human capital becomes more prevalent and becomes distributed over a greater proportion of the population
- thus, initially there is nearly universal equality and poverty; as the economy develops, people are removed from poverty until all workers have some skills and work in a modern commercial economy
- inequality in industrialized countries:
 - recently income inequality has increased in industrialized economies – there is debate over what caused this
 - however, the functional distribution of income (the proportions paid to labor and capital) in industrialized countries tends to remain stable (it has not changed in the United States over the past 100 years or so)
- inequality and growth:
 - lower inequality is correlated with faster growth
 - this may be due to:
 - 1) political stability – there is less demand for harmful interventionist actions by the government
 - 2) a better distribution of education and a wider distribution of skills
- measures of inequality:
 - measuring inequality requires capturing the distribution of some type of income or asset
 - we might for example measure the inequality of:
 - 1) income (either disposable income or income after taxes/transfers)
 - 2) wealth (assets that an individual or household owns)
 - 3) consumption

we will refer mainly to the distribution of income, but will not be specific about which variant of income (e.g., before or after tax) we have in mind
- to measure inequality, we also need a unit of analysis:
 - 1) individuals (usually adults or laborers)
 - 2) households (either the total household income or income per person, with the household as unit of observation)

we will look at the distribution of average per capita income among households
- ordering data on inequality:
 - often a partial data set is used although data on all households is preferred
 - suppose there are 50,000,000 households in a country; the first step is to order the households from poorest to richest (lowest to highest per capita household income)

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- then, typically the households are grouped together in quintiles although sometimes deciles are used; for example, the poorest 20% of households in the data set are grouped together in the “bottom quintile”, the next poorest 20% are grouped together in the “second quintile”, and so on:

Bottom quintile	10,000,000 households with the lowest incomes
Second quintile	10,000,000 households with the next lowest incomes
Middle quintile	10,000,000 households with the next lowest incomes
Fourth quintile	10,000,000 households with the next lowest incomes
Top quintile	10,000,000 households with the highest incomes

- page 124, table 4-3 – income shares in Sri Lanka in 1973:

	Income Share
Bottom quintile	7.2%
Second quintile	12.1%
Middle quintile	16.3%
Fourth quintile	21.6%
Top quintile	42.9%

the percentage next to each quintile represents the proportion of total household income going to that quintile

if income were distributed perfectly evenly among households, then each quintile would receive 20% of total household income (each household would receive average income per household)

in this case, the fourth quintile receives 21.6% of total income, which is more than the 20% it would receive if income were distributed perfectly equally; thus, the fourth quintile receives greater than average income

usually each of the three lowest quintiles receives less than 20% of total household income; this demonstrates that most households (at least 3/5) receive less than average household income

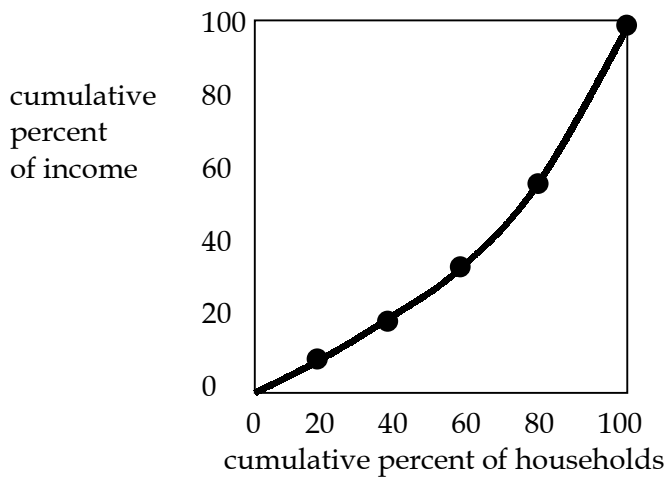
- this data can be modified to consider the cumulative share of income of the bottom 20%, bottom 40%, bottom 60%, and so on:

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	Proportion of all income going to quintile	Cumulative share of income
Bottom quintile	7.2%	7.2%
Second quintile	12.1%	19.3%
Middle quintile	16.3%	35.6%
Fourth quintile	21.6%	57.2%
Top quintile	42.9%	100.0%

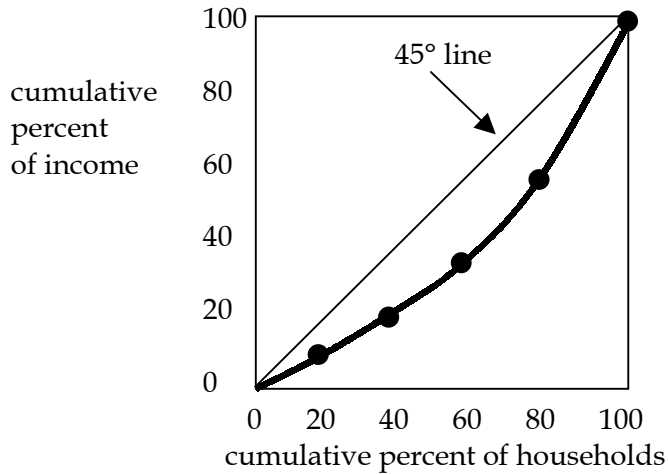
the “Cumulative share” column shows that the poorest 20% of households receive 7.2% of total household income, the poorest 40% of households receive a total of 19.3% (7.2% + 12.1%) of total household income, the poorest 60% of households receive 35.6% (7.2% + 12.1% + 16.3%) of total household income, and so on

- the Lorenz curve:
 - the Lorenz curve plots the cumulative share of income versus the percent of households considered in the cumulative share (this graph of the Lorenz curve uses the data above for Sri Lanka in 1973):

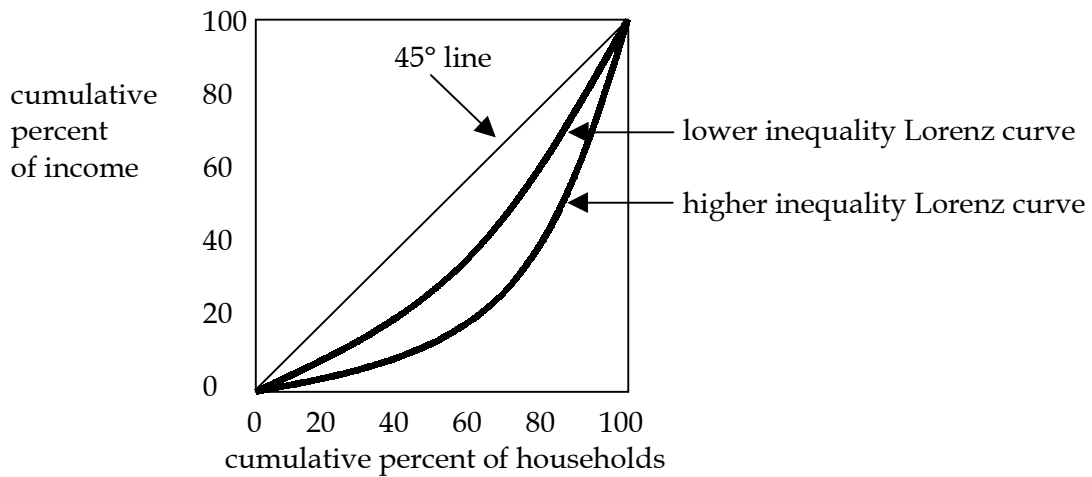


- to measure inequality, other variables can be used instead of income, such as wealth, consumption, land, etc.
- the 45° line shows what the Lorenz curve would look like if there were perfect equality; it is a useful reference because the distance between the Lorenz curve and 45° line is a measure of inequality:

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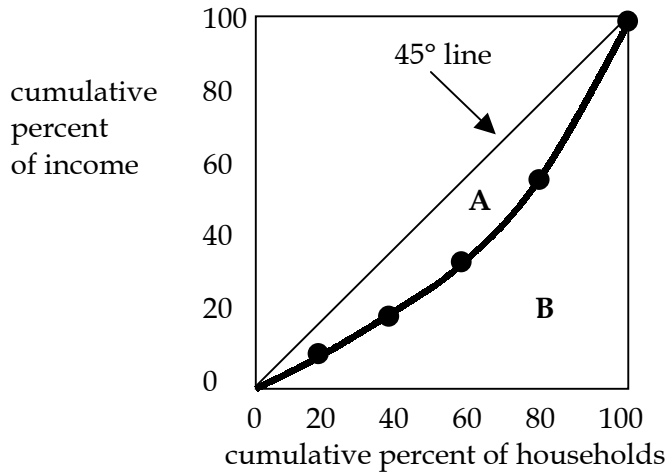


- the following Lorenz curves show two different distributions of income:



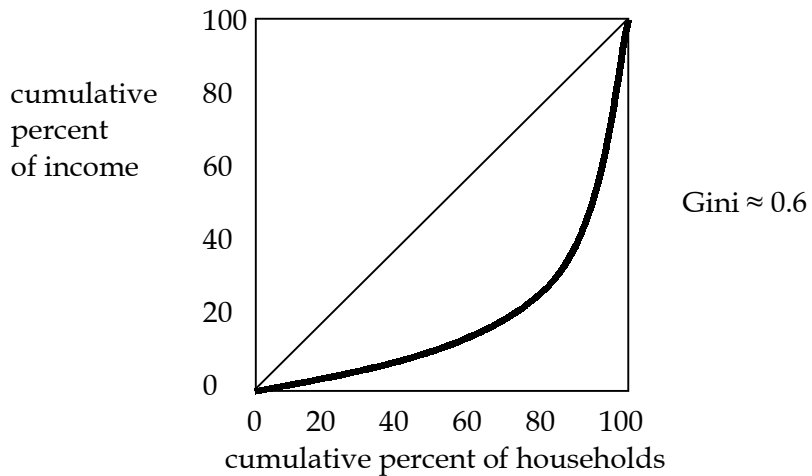
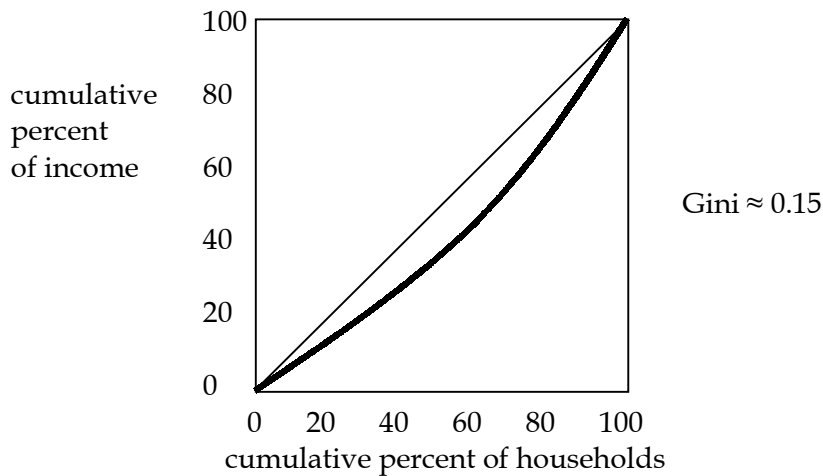
- the Gini coefficient:
 - the Gini coefficient is a measure of inequality based on the distance between the Lorenz curve and the 45° degree line
 - the Gini coefficient is taken as the ratio of the area between the Lorenz curve and the 45° line (area A) to the area below the 45° line (area A + area B):

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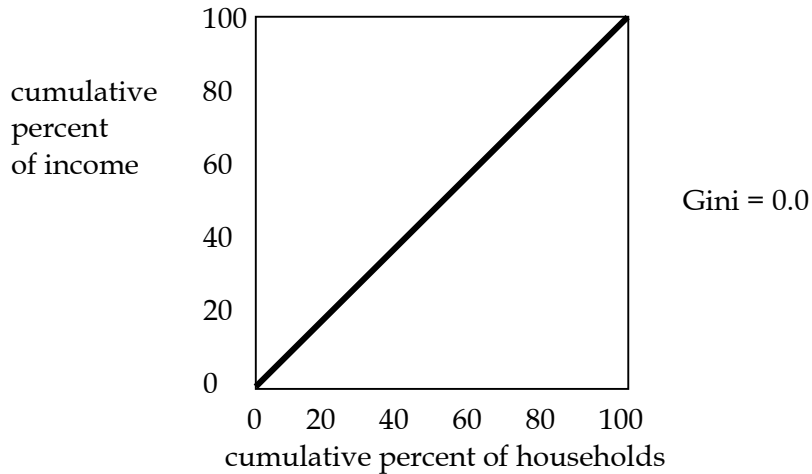
$$\text{Gini coefficient} = (\text{Area A}) / (\text{Area A} + \text{Area B})$$

- examples of the Gini coefficient:

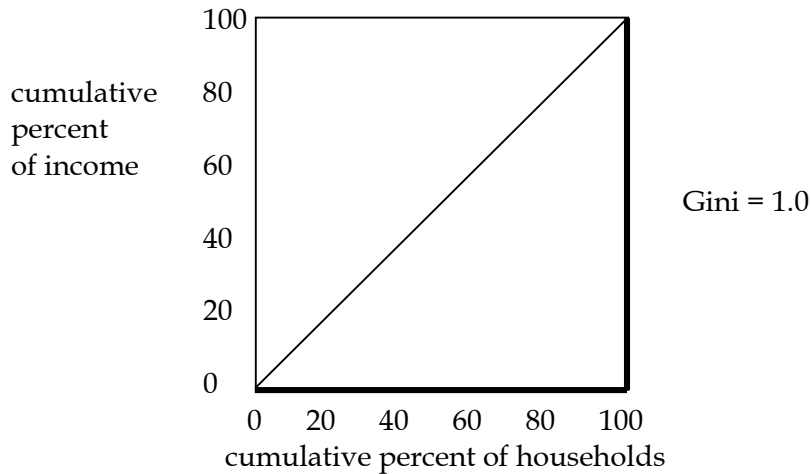


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- the minimum value of the Gini coefficient is 0; in that case, the 45 degree line and Lorenz curve coincide:



- the maximum value of the Gini coefficient is 1; in this case, only one household has all the income while the rest have none:



- empirically, Gini coefficients for income vary from about 0.25 to 0.6; for example, Sweden has a Gini coefficient equal to 0.27 while Guatemala and Honduras have Gini coefficients close to 0.6
- in the example above, Sri Lanka had a Gini coefficient of about 0.35 in 1973; this decreased from 0.46 in 1953 and 0.45 in 1963
- page 130, table 4-6 shows average Gini coefficients for groups of countries:

Country group	Gini coefficient
Low-income countries	0.42
Lower-middle-income countries	0.44
Upper-middle-income countries	0.51
High income countries	0.34
Transition economies	0.31

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this cross-sectional data showing level of development versus inequality is consistent with the Kuznet's curve

- growth and income distribution:
 - although an economy as a whole can appear to be growing rapidly, income could be decreasing for a large segment of the population
 - for example, the income distribution in Guatemala in 1989 was:

Quintile	Income share of quintile
Lowest quintile	2.1%
Second quintile	5.8%
Middle quintile	10.5%
Fourth quintile	18.6%
Highest quintile	63.0%

in this case, the bottom 80% of the population was receiving less than the average income

in the highest quintile, the concentration of income is especially high in the top 1-2% which increases the income share of the highest quintile significantly even if households in the rest of the quintile receive about average income

- suppose each of the quintiles has the following income growth rates over some period of time:

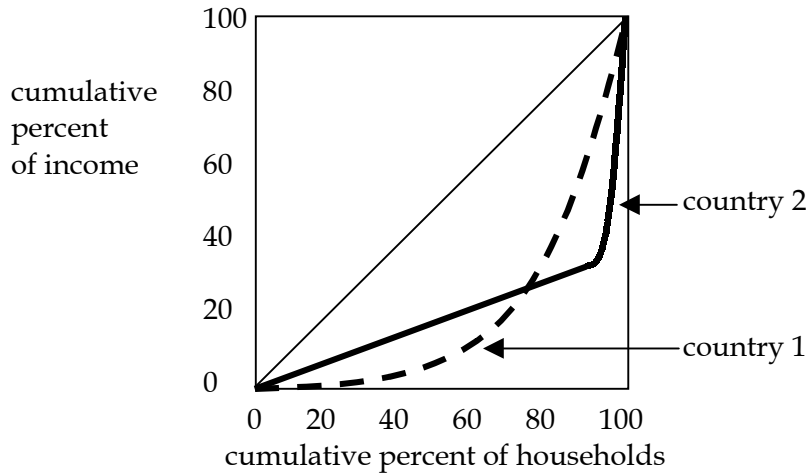
Quintile	Income share of quintile	Rate of growth of income
Lowest quintile	2.1%	-10%
Second quintile	5.8%	-10%
Middle quintile	10.5%	-10%
Fourth quintile	18.6%	0%
Highest quintile	63.0%	10%

- this data can be used to determine the overall growth rate of income; the average income growth rate is the weighted average of the income growth rates of each quintile – each quintile's income growth rate is weighted by the quintile's respective share of income:

growth rate of average income

$$= (0.63)(+10\%) + (0.186)(0\%) + (0.105 + 0.058 + 0.021)(-10\%) = +4.46\%$$

- thus, it is mathematically possible for the average income to increase while the income of 60% of the population is decreasing – in this case, most people are worse off over time even though average income grows
 - it is possible that growth does not correlate to higher incomes for the poor because of high inequality
- the Gini coefficient and different distributions of income:
 - the Gini coefficient does not capture all information about the distribution of income; the Gini coefficient can be the same for two different Lorenz curves:



- because the areas between each Lorenz curve and the 45° line are the same, the Gini coefficients for both income distributions will be equal
- country 1 has a higher level of poverty than country 2
- country 2, however, lacks a large middle class (the income shares of 80-90% of the population is not increasing rapidly - income is concentrated at the top)
- this demonstrates that one statistic (such as the Gini coefficient) is insufficient to fully characterize income distribution
- alternative measures of income distribution:
 - an alternative measure of income distribution is a ratio of the income share of some high income group to the share of income of some low income group; for example, the ratio of the income of the top 10% to the income of the bottom 10%, the ratio of the income of the top 10% to the income of the bottom 40%, and the ratio of income of the top 20% to the income of the bottom 40%
 - page 130, table 4-6::

	Share of income of lowest 40%	Share of income of highest 20%	Ratio of share of income of top 20% to bottom 40%	Gini coefficient
Low-income countries	15.7%	48.8%	3.11	0.423
Lower-middle-income countries	14.9%	50.1%	3.36	0.438
Upper-middle-income countries	11.7%	55.7%	4.76	0.511
High-income countries	18.7%	40.4%	2.16	0.338
Transition Economies*	21.0%	39.0%	1.86	0.307

*countries formerly under Communist rule that are under transition from socialist economies

- these ratios are an alternative to the Gini coefficient; they correlate well with the Gini coefficient

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- the above data demonstrates how cross-sectional data supports the Kuznets curve
- however, economic systems and patterns also have an effect on a country's level of inequality; for example, because of greater redistribution, transition economies have less inequality than high-income countries even though transition economies are less developed
- poverty:
 - poverty is defined in relation to an absolute standard; this standard can be calculated by determining a basket of goods sufficient for basic needs and calculating the income required to purchase this consumption bundle; the World Bank uses incomes of \$1 per day and \$2 per day as standards for severe and moderate poverty, respectively
 - if a country's average income is high enough, then even the poorest households can be above the World Bank's poverty standard; for example, very few people in OECD countries have incomes below \$1 per day
 - page 132, table 4-7:
 - the greatest share of the world's absolute poor are in South Asia (39%) and East Asia and the Pacific (excluding China) (34%); this is followed by sub-Saharan Africa (17%) and Latin America and the Caribbean (8%)
 - the percent of the population in a region that is in poverty is highest in South Asia (43%) and sub-Saharan Africa (40%). Although these proportions are nearly equal, South Asia has a greater percent of the world's poor because its overall population is larger than that of sub-Saharan Africa
 - the textbook discusses the "Africanization of poverty" – according to projections, the proportion of the world's poor in South Asia, etc. will decrease while it increases in sub-Saharan Africa
- alternative measures of welfare:
 - Physical Quality of Life (PQLI):
 - PQLI was developed by Morris Morris, currently a professor emeritus at Brown
 - PQLI considers life expectancy, infant mortality, and literacy (two health measures and one education measure)
 - to calculate PQLI, statistics are normalized from 0 to 1 (for example, the highest infant mortality is assigned a value of 0, the lowest infant mortality is assigned a value of 1, and the rest are set in between), and the unweighted values of the 3 factors are added together to determine a country's PQLI
 - Human Development Index (HDI):
 - the HDI is used as an alternative index by the United Nations Development Programme (UNDP) – the UNDP publishes the annual Human Development Report, which focuses on social indicators as opposed to the World Bank's World Development Report (WDR) which focuses on economic statistics
 - the HDI considers life expectancy (a measure of health), mean years of schooling and adult literacy rate (both measures of education), and GNP per capita
 - the HDI is closely correlated with GNP per capita but there are countries with large differences, which are often explained by differences in income distribution and/or government policies
- redistribution:

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- to promote growth with equity (so that growth reaches the largest number of people, especially the poor), a country might be able to get better results if it focuses on poverty
- there are three approaches to redistribution:
 - 1) redistribute first, then grow
 - 2) redistribution with growth
 - 3) basic human needs approach

another alternative is growth without attention to redistribution – this used to be the traditional view of economists who believed that poverty would automatically decrease with growth

- redistribute first, then grow:
 - the government could redistribute assets within the population to ensure a more equal distribution of the benefits of growth; for example, land reform
 - land reform leads to more equal distribution when it is uncompensated (the owners whose land was taken away are not compensated); land reforms have been implemented in some countries; other countries have legislated land reforms but have not implemented them
 - other factors (such as human capital) cannot be redistributed but the distribution can be changed over time (such as by giving people access to education)
 - a theorem in microeconomics states that any equilibrium distribution of income one might desire can be attained through the operation of a market economy, provided one begins with the right distribution (among individuals or households) of endowments of the factors of production

a household or individual's income depends on the prices of goods, the marginal productivity of factors, and the initial endowment of the individual or household (how much capital, land, labor, etc. he/it has):

$$y_i = [L_i \times (\text{wage})] + [K_i \times (\text{profit rate})] + [Land_i \times (\text{rental rate of land})]$$

y_i = an individual or household's income

L_i = the amount of labor provided by an individual or household

K_i = the amount of capital an individual or household owns

$Land_i$ = the amount of land an individual or household owns

a perfectly competitive market can be used to get an equal distribution of income if one first manipulates the initial distribution of assets

- “redistribute, then grow” is consistent with this microeconomic theorem, but redistribution has an effect on incentives; confiscating and redistributing once will have little effect on people's incentives to work, etc.; however, if confiscation affects people's view of the security of their property rights (because if it is done once, it may be done again) then it will affect how they manage their assets
- redistribution with growth:
 - this approach changes the ownership of assets incrementally as growth proceeds
 - for example, this approach would make education more available to the poor over time

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- this method could use progressive taxation (which does not impact initial ownership) to subsidize the poor, such as through health and education programs or outright grants
- basic human needs:
 - this approach encourages selective government intervention for the poor while the government promotes growth
 - the idea is in some tension with strict neoclassical economics (mainstream economics) because the approach of this school of economics does not distinguish between needs and wants; however, development practitioners identify some things as necessary, such as sufficient calories, basic health care, etc.
 - one intervention the government could take is distributing food at low cost; government subsidies of food have caused serious problems in LDCs because of budgetary demands; often after a few years of subsidies the government drops the subsidies after financial difficulties, which leads to serious political consequences; yet other countries have been more successful (for example, by rationing coarse grain, which only people who truly need food would want)