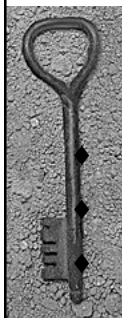# Topic 3: Poverty and Income Distribution

By

Lakshmi K. Raut

Income Distribution and Poverty

- Key Concepts:
- Personal (size) and functional distribution of income
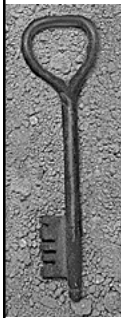- Measures of income inequality
    - Quintile, decile
    - Lorenz curve, Gini coefficient
- Measures of absolute poverty
    - Dollar-a-day (adjusted for PPP), HPI (Human Poverty index)
- Trade-off between growth and income inequality?

Basic Questions

- What is the extent of relative inequality and poverty in LDCs?
- What are the economic characteristics of the poor?
- Who benefits from economic growth?
- Are economic growth and more equitable income distributions compatible objectives?
- What policies will reduce absolute poverty?

Quintiles and deciles

- Suppose we have 20 individuals in the economy, with total income $100. First arranged by their income as in the table.
- Divide the population into successive quintile (I.e., 5 equal groups starting from the top. (for decile into 10 groups)
- First quintile, bottom 20% enjoys 5% of total income.
- Second quintile receives 9%
- Thus bottom 40% shares 5+9=14% of total income.
- Top 20% enjoys 51%

TABLE 5.1 Typical Size Distribution of Personal Income in a Developing Country by Income Shares—Quintiles and Deciles

Individuals	Personal Income (money units)	Percentage Share in Total Income Quintiles	Percentage Share in Total Income Deciles
1	0.8		1.8
2	1.0		
3	1.4	5	3.2
4	1.8		
5	1.9		3.9
6	2.0		
7	2.4		5.1
8	2.7	9	
9	2.8		5.8
10	3.0		
11	3.4		7.2
12	3.8	13	
13	4.2		9.0
14	4.8		
15	5.9		13.0
16	7.1	22	
17	10.5		22.5
18	12.0		
19	13.5		28.5
20	15.0	51	100.0
Total (national income)	100.0	100	100.0

2

Income inequality of a selected few countries

- Which country has the highest and which country has the lowest income inequality according to the following measures:
1. highest 10%,
2. the 1st quintile, and
3. the 5th quintile.
- Answers:
- (1) Brazil, Bangladesh
- (2) Guatemala, Bangladesh
- (3) Brazil, Bangladesh
- **Conclusion:** The ranking of the countries depend on the measure of income inequality that is used. Later we will see for Lorenz curve and Gini coefficient.

**TABLE 5.2** Some Income Distribution Estimates, 1990s

| Country | | | Quintile | | | Highest 10% | Year |
	1st	2nd	3rd	4th	5th		
Bangladesh	9.4	13.5	17.2	22.0	37.9	23.7	1992
Botswana	3.6	6.9	11.4	19.2	58.9	42.9	1986
Brazil	2.5	5.7	9.9	17.7	64.2	47.9	1995
Colombia	3.1	6.8	10.9	17.6	61.5	46.9	1995
Costa Rica	4.0	8.8	13.7	21.7	51.8	34.7	1996
Ghana	7.9	12.0	16.1	21.8	42.2	27.3	1992
Guatemala	2.1	5.8	10.5	18.6	63.0	46.6	1989
Honduras	3.4	7.1	11.7	19.7	58.0	42.1	1996
India	9.2	13.0	16.8	21.7	39.3	25.0	1994
Jamaica	5.8	10.2	14.9	21.6	47.5	31.9	1991
Pakistan	8.4	12.9	16.9	22.2	39.7	25.2	1991
Peru	4.9	9.2	14.1	21.4	50.4	34.3	1994
Philippines	5.9	9.6	13.9	21.1	49.6	33.5	1994
South Africa	3.3	5.8	9.8	17.7	63.3	47.3	1993
Zambia	3.9	8.0	13.8	23.8	50.4	31.3	1993
Averages	5.2	8.5	13.7	20.8	51.8	36.0	

Source: World Bank, *1998 World Development Indicators* (Washington, D.C., World Bank, 1998), tab. 2.8.

Lorenz curve

- On the x-axis percentage of population according to income ordering, such as bottom 10%, bottom 20%, and the y-axis, represents the percentage of income received.
- Plot various (x,y) from the previous table, and draw a curve passing through them.
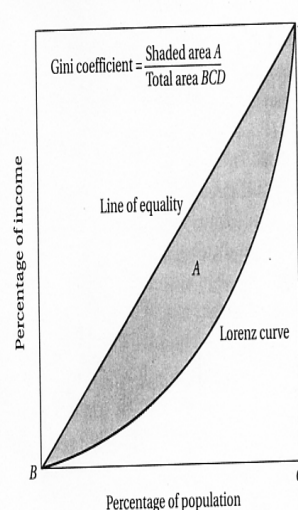- Example: (Table 5.1)
  - Point A = (10,1.8)
  - Point B = (20,5)

Figure 5.1 The Lorenz Curve
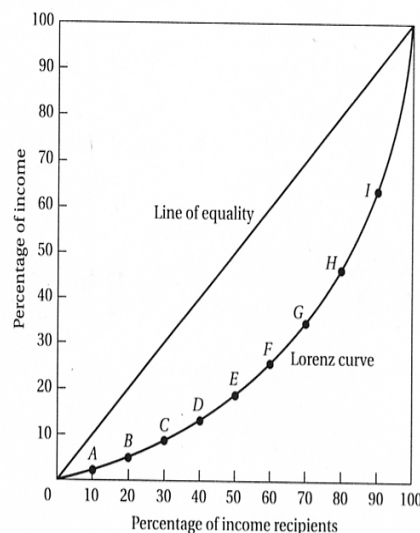
Gini Coefficient

♦ Gini coefficient = Area A / Area BCD.

♦ Explain why higher Gini-coefficient menas higher inequality

♦ Why do we need Gini-coefficient, what is wrong with Lorenz curve?

♦ (Ans.) Lorenz curve cannot compare the income inequality of two countries, if their Lorenz curves crosses each other. Gini coefficient does not have this problem.

Figure 5.6 Estimating the Gini Coefficient

$$\text{Gini coefficient} = \frac{\text{Shaded area } A}{\text{Total area } BCD}$$

Percentage of income

Line of equality

A

Lorenz curve

B   C

Percentage of population

Income distribution of selected few countries (Gini coefficient)

♦ According to income share of lowest 40% criterion, Bangladesh has lowest and Brazil and Paraguay have highest income inequality.

♦ According to Gini coefficient criterion, Bangladesh has lowest and Brazil has highest income inequality.

♦ Note that according both criteria, Bangladesh and Sri-Lanka have very similar income distribution. But, Bangladesh is much poorer than Sri-Lanka in terms of per capita income.

♦ **What can explain this? Can you think of some reasons?**

TABLE 5.3 Per Capita Income and Inequality in Developing Countries, 1990s

Country	GNP Per Capita, 1996 (U.S. $)	Income Share of Lowest 40% of Households	Ratio of Highest 20% to Lowest 20%	Gini Coefficient
Bangladesh	260	22.9	4.0	0.28
Kenya	320	10.1	18.3	0.58
Sri Lanka	740	22.0	4.4	0.30
Indonesia	1,080	20.4	5.1	0.34
Philippines	1,160	15.5	8.4	0.43
Jamaica	1,600	16.0	8.2	0.41
Paraguay	1,850	8.2	27.1	0.59
Costa Rica	2,640	12.8	12.9	0.47
Malaysia	4,370	12.9	11.7	0.48
Brazil	4,400	8.2	25.7	0.60

Source: World Bank, World Development Indicators, 1998 (Washington, D.C.: World Bank, 1998), tabs. 1.1 and 2.8.
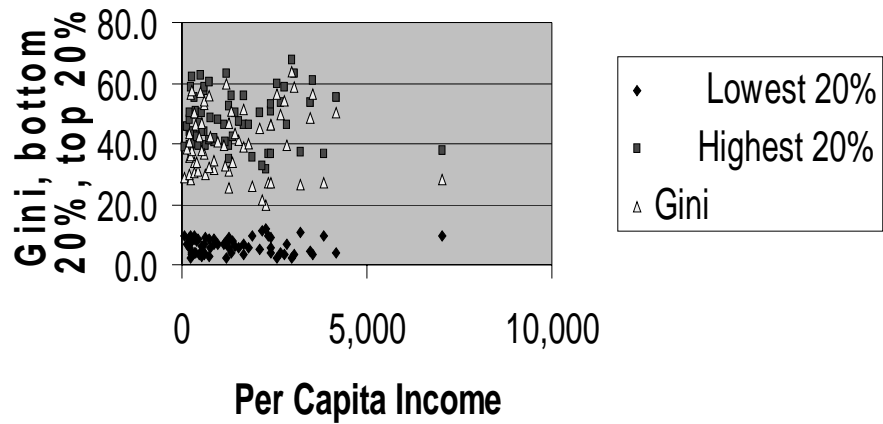
Per capita income and Distribution of

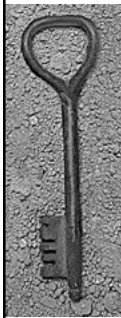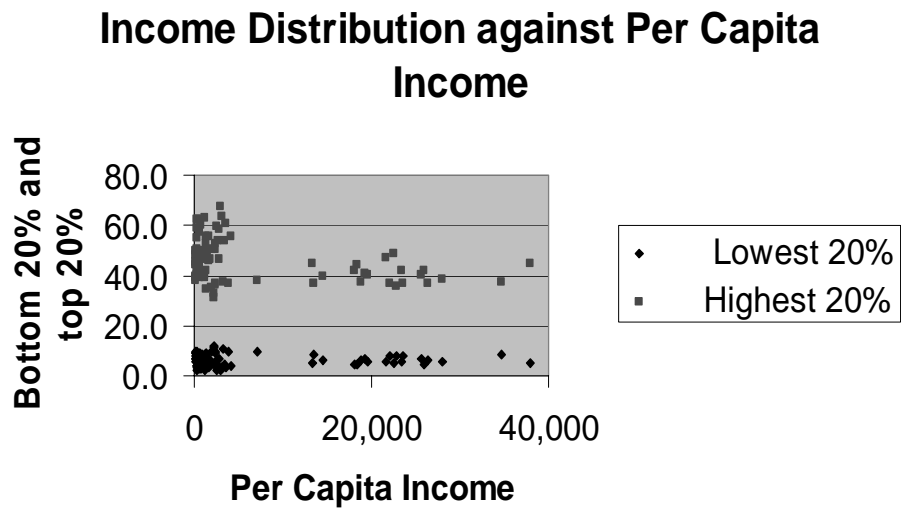## Distribution of Income against Per Capita Income
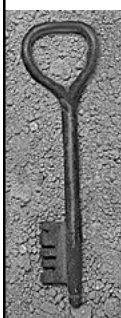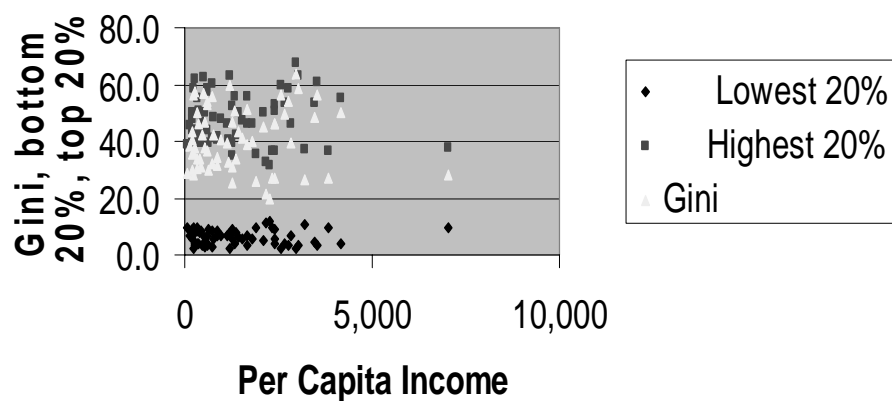
Analysis

➢ When we drop a few countries in the middle income group, which are able to achieve more equal income distribution, it looks like there is an **inverted-U** relationship between per capita income and income inequality.
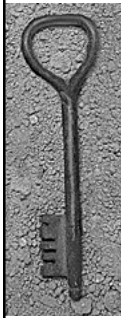
Distribution of Income against Per Capita Income

Gini, bottom 20%, top 20%

80.0
60.0
40.0
20.0
0.0

0   5,000   10,000

Per Capita Income

- ◆ Lowest 20%
- ■ Highest 20%
- △ Gini

Per capita income and Distribution of Income(2)

Income Distribution against Per Capita Income

Bottom 20% and top 20%

80.0
60.0
40.0
20.0
0.0

0   20,000   40,000

Per Capita Income

- ◆ Lowest 20%
- ■ Highest 20%

Analysis

♦ Both slides show that except for a few exceptions if taken out, there is an inverted U relationship between income per capita and income inequality, especially in terms of Gini coefficient.

♦ Look at those few exceptional countries which are in the middle income range but they are able to have lower income inequality. What could be the explanations for it?

 – Some of these exceptional countries are: Latvia, Hungary, Polland, Slovenia, Bulgaria,

Population below poverty line

TABLE 5.6 Population below the Poverty Line in the Twelve Countries That Account for 80 Percent of the World's Poor, 1997

Country	1997 Population (millions)	Percent below Poverty Line (year)	Estimated Number of Poor (millions)
India	970	52.5 (1992)	509
China	1,236	22.2 (1995)	274
Brazil	160	23.6 (1995)	38
Nigeria	107	31.1 (1993)	33
Ethiopia	59	46.0 (1982)	27
Indonesia	204	11.8 (1995)	24
Philippines	73	28.6 (1991)	21
Pakistan	138	11.6 (1991)	16
Kenya	29	50.2 (1992)	15
Mexico	96	14.9 (1992)	14
Peru	24	54.0 (1991)	13
Nepal	23	50.3 (1995)	12
Total			996

Sources: Population Reference Bureau, *1997 World Population Data Sheet* (Washington, D.C.: Population Reference Bureau, 1997), World Bank, *World Development Indicators, 1998* (Washington, D.C.: World Bank, 1998), tab. 2.7.