Chapter 13

Income Inequality
Questions

1. How to measure income inequality?
2. Does everyone benefit from economic growth? (or the rich getting richer while poor are getting poorer?)
3. Why is there income inequality?
4. Is income inequality a bad thing?
   - Economic and political consequences of income inequality
   - Arguments in favor and against income inequality and income redistribution
5. Equality of outcome vs. equality of opportunity – Intergenerational Mobility.
13.1 Income Inequality: The Facts

- One way to look at income distribution is to divide the population into equal size groups (quintiles) ranked according to their average income.
• Each of the 5 quintiles is composed of 20% of the population.

• The poorest 20% of the population have an average household income of $11,552

• The richest 20% of the population have an average household income of $170,844
The Facts continued

• Another way to look at income distribution is to divide the income into equal size intervals and see how much of the population falls into each interval.
Mean household income = $67,976 and Median = $49,777.

median < mean, indicates long right tail distribution.
The Gini coefficient

- Using table 13.1 we can construct the **cumulative** percentage of income.

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Av. Income</th>
<th>% of total income</th>
<th>Cumulative % of income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$11,552</td>
<td>3.40%</td>
<td>3.40%</td>
</tr>
<tr>
<td>2</td>
<td>$29,257</td>
<td>8.61%</td>
<td>12.01%</td>
</tr>
<tr>
<td>3</td>
<td>$49,534</td>
<td>14.57%</td>
<td>26.58%</td>
</tr>
<tr>
<td>4</td>
<td>$78,694</td>
<td>23.15%</td>
<td>49.73%</td>
</tr>
<tr>
<td>5</td>
<td>$170,844</td>
<td>50.27%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Lorenz curve for the U.S. 2010

Cumulative percentage of household income vs. Cumulative percentage of households.

- Line of perfect equality
- Lorenz curve

49.8% cumulative income for 50% of households
26.6% cumulative income for 30% of households
12.0% cumulative income for 20% of households
3.4% cumulative income for 10% of households
Lorenz curve for the U.S. 2010

Perfect equality is when $Gini = 0$, and maximum inequality is when $Gini = 1$. 

$$Gini = \frac{A}{A + B}$$
Redistribution of income from rich to poor shifts the Lorenz curve closer to the 45° line, and the Gini coefficient becomes smaller.
Gini coefficient in the world

Source: CIA - The World Factbook 2003
Figure 13.3
The Kuznets Curve

Income inequality

GDP per capita
**Figure 13.4**
The Kuznets Curve in England and Wales, 1823–1915

![Graph showing the Kuznets Curve with Gini coefficient on the y-axis and years from 1820 to 1920 on the x-axis.](image)

Income per Capita Versus Inequality

Gini Coefficient, 1975

Correlation coefficient: -0.428

GDP per Capita, 1975, 1,000
Income per Capita Versus Inequality

![Graph showing the relationship between Gini Coefficient and GDP per Capita with a correlation coefficient of -0.423.](image-url)
Case study: Is Growth Good for the Poor?

- Santana - Maria Maria
- “Stop the looting, stop the shooting
  Pick pocking on the corner
  See as the rich is getting richer
  The poorer is getting poorer”
- Are poor getting poorer as the rich getting richer?
Case study: Is Growth Good for the Poor?

• One way to answer this question is to examine what happens to the average income of the **poorest 20% of the population** and the **average GDP/capita**
Figure 13.6
Income per Capita Versus Income of the Bottom Quintile

Case study: looking at the growth episodes.

- Recent study of 88 episodes in which the average level of income per capita grew shows that only in one country (Columbia) the income of the poorest 20% decreased.
Is Growth Good for the Poor?

• In most cases the answer is “Yes”.
13.2 Sources of Income Inequality

- Relevant Characteristics: Education, health, location, skill, talent
- Luck (“born with a silver spoon in his mouth”).
- Irrelevant characteristics
How does education affect the income inequality?
Example

- In this example the only source of income inequality is education.
- If the return to education was zero, then income distribution was perfectly equal.
Example cont.

- Higher returns to education increase income inequality.
Example cont.

• More equal distribution of education levels (more equal access to education), reduces income inequality.
Explaining the Kuznets curve

• In the first stage of development the returns to particular skill and education increase, leading to higher income inequality.

• In the later stages of development more people would acquire education (because of the high returns) and the returns to education will diminish. Both of these effects will decrease the income inequality.
Explaining the recent rise in income inequality
Figure 13.10 Income Inequality in the United States: 1947–2009
Possible explanations

• **Technological advances**, which increased the returns to certain characteristics (e.g. education).

• **Increased international trade**, which increased the returns to skills that are plentiful in the home country and scarce in the rest of the world.

• **“Superstar” dynamics**, the phenomenon that people with highest levels of particular skill earn much more than people with slightly lower qualifications (e.g. in sports, and recently in other areas).
13.3 Effect of Income Inequality on Economic Growth
Effect of income inequality on the accumulation of physical capital

**Table 13.2**

<table>
<thead>
<tr>
<th>Income Quintile</th>
<th>Median Saving Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Lowest)</td>
<td>8.6%</td>
</tr>
<tr>
<td>2</td>
<td>12.9%</td>
</tr>
<tr>
<td>3</td>
<td>16.3%</td>
</tr>
<tr>
<td>4</td>
<td>18.0%</td>
</tr>
<tr>
<td>5 (Highest)</td>
<td>23.0%</td>
</tr>
</tbody>
</table>

Source: Dynan, Skinner, and Zeldes (2000), Table 3. Data are for households with heads aged 30–59.

- More inequality leads to higher saving and accumulation of physical capital, thereby boosting growth.
Effects of inequality on the accumulation of human capital.

- Consider an individual who decides on the optimal investment in two types of capital: (1) physical capital and (2) human capital.
- The marginal product of human capital is very high for low levels human capital and diminishing with the investment level.
- The marginal product of physical capital is fixed (from an individual point of view).
Suppose one person is rich and has much more than I* to invest and another poor, who has less than I* to invest. Transferring income from rich to poor will increase the total investment in human capital, and total output will go up.
Income inequality, redistribution and efficiency.

- Governments use taxes to redistribute income.
Income inequality, redistribution and efficiency.

U.S. Government: Transfers as % of Total Receipts

Percentage

0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%

Year

Inefficiency of taxes

1. When taxes are high there are more incentives to avoid paying them (either by cheating on tax reports or not working in legal and taxable occupation).

2. Redistributive taxes provide negative incentive for people to excel (work hard, study hard, try to achieve promotion, etc.)
Inefficiency of taxes

• Suppose that the government collects proportional tax from everybody (say 40% from everybody) and then redistributes the tax revenues equally.

• People with higher income pay more taxes (in dollar amount, not in %).

• Who benefits and who looses?
Who benefits and who looses from redistributive taxes?

<table>
<thead>
<tr>
<th>Household</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-tax income</td>
<td>10</td>
<td>55</td>
<td>100</td>
<td>291</td>
<td>1,000</td>
</tr>
<tr>
<td>Taxes</td>
<td>-4</td>
<td>-22</td>
<td>-40</td>
<td>-117</td>
<td>-400</td>
</tr>
<tr>
<td>Transfer</td>
<td>117</td>
<td>117</td>
<td>117</td>
<td>117</td>
<td>117</td>
</tr>
<tr>
<td>After-tax income</td>
<td><strong>123</strong></td>
<td><strong>150</strong></td>
<td><strong>177</strong></td>
<td><strong>291</strong></td>
<td><strong>717</strong></td>
</tr>
</tbody>
</table>

Median income household

Mean income household
Who benefits and who looses from redistributive taxes?

- Those who earn above the mean are worse off.
- Those who earn below the mean are better off.
Figure 13.12
Relationship Between Income Inequality and the Desired Tax Rate

- Desired tax rate
- Revenue-maximizing tax rate
- Tax rate favored by person with median income
- Mean income
- Pretax income

0 0

Median income
Voting on the tax rate

• Suppose that everybody has to vote on either to **increase** the tax rate or to **decrease** the tax rate.

• If the tax rate is below the one favored by the median voter, then there is majority to increase it.

• If the tax rate is above the one favored by the median voter, then there is a majority to decrease the tax rate.

• So the median voter “gets to decide” the tax rate in the country where people can vote on the tax rate. He will choose **above zero** because median < mean when income has a “right tail” distribution.
Figure 13.13

How an Increase in Income Inequality Affects the Desired Tax Rate

- Desired tax rate
- Tax rate favored by person with median income
- Mean income
- Pretax income

Median income
How inequality can lead to lowering the total income.

• Q. Consider 2 countries, A and B, with the same mean income but country A has more income inequality. Which country will have higher tax rate?

• A. Country A, since the median voter’s income is lower in country A and he decides on the tax rate.

• As a result country A will have less efficiency and ultimately lower the **total** income.
Income inequality and sociopolitical unrest

• Income inequality can lead to conflicts. Recent example is Venezuela in late 2002 and early 2003 (large parts of the economy were shut down).
Figure 13.14 Relationship between Income Inequality and Sociopolitical Instability
13.4 Economic Mobility

- The table shows the probabilities of intergenerational transition between income groups. For example, if the father is in the poorest quartile, there is 17% chance that the son will end up in the richest income group.

<table>
<thead>
<tr>
<th>Father’s Earnings Quartile</th>
<th>1st (Bottom)</th>
<th>2nd</th>
<th>3rd</th>
<th>4th (Top)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (Bottom)</td>
<td>.33</td>
<td>.28</td>
<td>.22</td>
<td>.17</td>
</tr>
<tr>
<td>2nd</td>
<td>.25</td>
<td>.27</td>
<td>.26</td>
<td>.21</td>
</tr>
<tr>
<td>3rd</td>
<td>.22</td>
<td>.24</td>
<td>.27</td>
<td>.27</td>
</tr>
<tr>
<td>4th (Top)</td>
<td>.20</td>
<td>.21</td>
<td>.25</td>
<td>.35</td>
</tr>
</tbody>
</table>

Source: Corak and Heisz (1998).
### 13.4 Economic Mobility

<table>
<thead>
<tr>
<th>Parents’ Income Quintile</th>
<th>1st (bottom)</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th (top)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st (bottom)</td>
<td>0.42</td>
<td>0.23</td>
<td>0.19</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>2nd</td>
<td>0.25</td>
<td>0.23</td>
<td>0.24</td>
<td>0.18</td>
<td>0.10</td>
</tr>
<tr>
<td>3rd</td>
<td>0.17</td>
<td>0.24</td>
<td>0.23</td>
<td>0.17</td>
<td>0.19</td>
</tr>
<tr>
<td>4th</td>
<td>0.08</td>
<td>0.15</td>
<td>0.19</td>
<td>0.32</td>
<td>0.26</td>
</tr>
<tr>
<td>5th (top)</td>
<td>0.09</td>
<td>0.15</td>
<td>0.14</td>
<td>0.23</td>
<td>0.39</td>
</tr>
</tbody>
</table>

*Source: Isaacs (2011a).*
What factors can increase mobility?

- Access to education
- Access to new technologies
- Love