Key Concepts

Measuring Economic Inequality

Money income equals market income plus cash payments to households by the government. Market income equals wages, interest, rent, and profit before paying income taxes. In 2000,

- the mode (most common) household income in 2000 was near $12,500;
- the median (the income for which 50 percent of families have higher incomes and 50 percent have lower) household income was $42,148, and
- the mean (or average) household income was $57,045.

The distribution of income is positively skewed, so that a relatively few people make very high incomes.

- The poorest 20 percent of families received 3.6 percent of the total income; the richest 20 percent received 49.6 percent of the total income.
- Inequality in income and wealth is illustrated by a Lorenz curve. A Lorenz curve for income (wealth) graphs the cumulative percentage of income (wealth) against the cumulative percentage of households. Figure 15.1 illustrates a Lorenz curve.

- The “line of equality” shows the (hypothetical) distribution of income (wealth) if everyone had the same income (wealth).
- The farther the Lorenz curve is from the line of equality, the more unequal is the distribution.

Income is the amount of earnings received by an individual over a period of time while wealth is the value of things the individual owns at a point in time. Measured wealth is more unequally distributed than income.

The data used to construct the wealth distribution do not include human capital and therefore overstate wealth inequalities.

The distributions of annual income are more unequal than distributions of lifetime income.

Since 1970, the distribution of income in the United States has become more unequal. On the average, married families, families with more education, middle-aged families and white families have higher incomes than the average.

Poverty exists when a household cannot buy the quantities of food, shelter, and clothing that are deemed necessary. In 2000, 31.1 million individuals had incomes below the official poverty level, $17,761 for a four-person household. A disproportionate number of these households were of Hispanic origin or were black.
The Sources of Economic Inequality

Differences in wages and earnings are partly a result of skill differentials, that is, differences in human capital. High-skilled labor has higher wages because:
- Demand — the demand for high-skilled labor exceeds the demand for low-skilled labor.
- Supply — skills are costly to acquire, so the supply of high-skilled labor is less than that of low-skilled labor.

High-skilled and Low-skilled Labor

![Figure 15.2](image)

Figure 15.2 illustrates the demand and supply for high-skilled and low-skilled labor. As the figure shows, high-skilled labor receives higher wages than low-skilled labor both because the demand for skilled labor is greater and also because the supply is smaller.

Human capital is the skills and knowledge of human beings. Workers with more human capital (more skills) receive higher wages. Less schooling, less work experience, and more career interruptions reduce human capital. Between races, differences in schooling have almost disappeared; between sexes, differences in work interruptions still exist though they have diminished.
- Over the past years, technological changes have increased the demand for demand for high-skilled workers and decreased it for low-skilled workers, thereby increasing the differences in wages.
- Discrimination can lead to differences in income. Those discriminated against receive lower wages and less employment than others. Economists point out that the higher wages paid more favored workers boosts firms’ costs and thereby makes it hard for firms to sustain this discrimination.
- Differences in degree of specialization can affect income differences. Specializing in market production increases productivity and hence wages. Social conventions have led men to specialize in market activities and women to divide their time between market activities and nonmarket activities, such as household production.
- Unequal ownership of capital contributes to differences in incomes. Inequalities can be passed to future generations through bequests (gifts to the next generation) and assortative mating (marrying within one’s socioeconomic class).

Income Redistribution

Income is redistributed by governments through income taxes, income maintenance programs, and provision of goods and services below cost. An income tax can be a:
- Progressive income tax — the average tax rate increases when income increases.
- Regressive income tax — the average tax rate decreases when income increases.
- Proportional income tax — the average tax rate does not change when income increases. (This type of tax is also known as a flat-rate income tax.)

Income maintenance programs include social security, unemployment compensation, and welfare. Taxes and income maintenance programs reduce the degree of inequality in the United States. The poorest 20 percent of household receive only 1.1 percent of market income but 4.6 percent of income after taxes and benefits. The big trade-off indicates that a more equal income distribution creates less efficiency. Redistribution weakens the incentive to work.

Young women who have not completed high school, have at least one child, and live without a partner are a major welfare challenge. More education and job training are the long-term solutions to removing these people from poverty. In the short run, welfare is the solution. The current welfare program for this group is the Temporary Assistance for Needy Families (TANF) program, which requires an adult member of the family work or perform community service and generally has a 5-year limit for receiving assistance.
Helpful Hints

1. **HOW TO CALCULATE A LORENZ CURVE:** If you are ever called upon to construct a Lorenz curve, the crucial point to recall is that it measures cumulative percentages. In other words, along the horizontal axis is the cumulative percentage of households and along the vertical axis is, say, the cumulative percentage of income. *Cumulate* is just a fancy word for *sum* or *add,* so the cumulative percentage of income means the total (the “added up”) income received by all households up to the point under consideration in the income distribution.

To construct a Lorenz curve, obtain a summary of the incomes of all the households. Calculate the income of the 20 percent having the lowest incomes, which in recent years is 3.6 percent of the nation’s total income. Plot this point. Then determine the income for the next 20 percent, which in recent years is 8.9 percent of the nation’s total income. Add these two to obtain the cumulative percentage, in this case 12.5 percent. Then plot another point representing the cumulative percentage of households, 40 percent, and the cumulative percentage of income, 12.5 percent. Continue until you reach 100 percent of the households. Connect the points that you have plotted to get the Lorenz curve.

Questions

- **True/False and Explain**
  
  **Measuring Economic Inequality**
  1. Income in the United States is distributed normally; that is, it has the common bell shape.
  2. The line of equality in a Lorenz curve shows what the income distribution would be if everyone received the same income.
  3. The poorest 20 percent of American families receive about 15 percent of the nation’s total income; the richest 20 percent receive about 25 percent of the nation’s total income.
  4. Measured income is less equally distributed than measured wealth.
  5. The farther the Lorenz curve is from the line of equality, the more equal is the distribution of income.
  6. Income is a flow of earnings; wealth is a stock of assets.
  7. The lifetime distribution of income is more equal than the annual distribution of income.
  
  **The Sources of Economic Inequality**
  8. Human capital refers to capital equipment that has been constructed by human workers.
  9. The demand for low-skilled workers is less than that for high-skilled workers.
  10. More years of schooling and more years of work experience both will increase human capital.
  11. If males on average earn more than females, there must be discrimination in the labor market.
  12. Bequests generally make the income distribution more equal.
  
  **Income Redistribution**
  13. A progressive income tax is one whose average tax rate falls as income increases.
  14. Government redistribution makes the income distribution more equal.
  15. The big trade-off is the idea that equalizing the distribution of income reduces economic efficiency.

- **Multiple Choice Questions**
  
  **Measuring Economic Inequality**
  1. The mean (average) U.S. family income in 2000 was approximately
     a. $12,000.
     b. $57,000.
     c. $93,000.
     d. $150,000.
  2. In a Lorenz diagram for income, the line of equality shows
     a. the most equitable income distribution.
     b. how unequally incomes are distributed.
     c. how much redistribution occurs.
     d. the income distribution if everyone received the same income.
Use Figure 15.3 for the next two questions.

**FIGURE 15.3**

**Multiple Choice Questions 3 and 4**

<table>
<thead>
<tr>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

3. In Figure 15.3 the straight line labeled $ab$ is the
   a. Lorenz curve.
   b. line of equality.
   c. line of poverty.
   d. line of distribution.

4. In Figure 15.3 the poorest 60 percent of households have what percent of the nation’s total income?
   a. About 37 percent
   b. About 60 percent
   c. About 63 percent
   d. Precisely 100 percent

5. The farther away a Lorenz curve for income is from the line of equality, the
   a. more equally wealth is distributed.
   b. more equally income is distributed.
   c. less equally income is distributed.
   d. None of the above.

6. The measured annual distribution of wealth
   a. understates inequality because it does not take into account the family’s stage in its life cycle.
   b. understates inequality because it does not take into account the distribution of human capital.
   c. overstates inequality because it takes into account the family’s stage in its life cycle.
   d. overstates inequality because it does not take into account the distribution of human capital.

7. Which of the following would show the LEAST amount of inequality?
   a. Measured annual income
   b. Measured annual wealth
   c. Lifetime income
   d. Measured annual income and annual wealth are equally distributed and are more equally distributed than lifetime income.

8. On average, which families have the highest incomes?
   a. Black households
   b. Households of Hispanic origin
   c. White households
   d. Households of Hispanic origin and white households are tied for the highest income

9. Of the approximate total population of 280 million people in America, about how many have incomes below the official poverty level?
   a. Approximately 13 million.
   b. Approximately 31 million.
   c. Approximately 59 million.
   d. Approximately 94 million.

**The Sources of Income Inequality**

10. The higher the cost of acquiring skills, the _____ are the high-skilled and low-skilled labor _____ curves.
    a. closer together; demand
    b. farther apart; demand
    c. closer together; supply
    d. farther apart; supply

11. Which of the following is a reason why the wage rate of high-skilled workers exceeds the wage rate of low-skilled workers?
    a. The market for high-skilled workers is more competitive than the market for low-skilled labor.
    b. The demand for high-skilled workers exceeds the demand for low-skilled workers.
    c. The number of high-skilled workers exceeds the number of low-skilled workers.
    d. Low-skilled workers often are in the process of acquiring more human capital.
12. Which of the following is NOT a potential reason for wage differences by race or sex?
   a. Discrimination
   b. Differences in human capital
   c. Differences in the degree of specialization
   d. All of the above are potential reasons for wage differences by race or sex

13. Which of the following will NOT increase a worker’s human capital?
   a. More work experience
   b. More training
   c. More schooling
   d. A higher wage rate

14. Comparing the wage rates between never-married men and women with the same amount of human capital, researchers have found that the wage rates are
   a. farther apart than the wage rates of other men and women in the labor force generally.
   b. the same as wage rates of other men and women in the labor force generally.
   c. equal.
   d. not comparable because men and women work at different jobs.

15. An example of a bequest is
   a. a pair of rich individuals marrying each other.
   b. money given by the government to a person living below the poverty level.
   c. a guaranteed annual income under a negative income tax.
   d. an inheritance left to a child.

16. An example of assortative mating is
   a. a poor woman marrying a rich man.
   b. a rich man marrying a rich woman.
   c. a rich woman marrying a poor man.
   d. something that cannot be expressed in polite society.

**Income Redistribution**

17. Which of the following reduces the inequality of income?
   a. Government payments to the poor.
   b. A regressive income tax.
   c. Large bequests.
   d. Assortative mating.

18. Government tax and redistribution programs
   a. generally redistribute income away from the poor and give it to the rich.
   b. have no net redistributive effects.
   c. generally redistribute income away from the rich and give it to the poor.
   d. are dwarfed by the scale of government programs designed to give away goods and services below cost.

19. The idea that increasing the equality of the income distribution reduces economic efficiency is called the
   a. negative tax trap.
   b. progressive tax problem.
   c. big trade-off.
   d. problem of poverty.

**Short Answer Problems**

**Table 15.1**

<table>
<thead>
<tr>
<th>Households grouped by income</th>
<th>Group income (dollars)</th>
<th>Percentage of total national income</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest 20%</td>
<td>$200,000</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Second lowest 20%</td>
<td>300,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle 20%</td>
<td>500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second highest 20%</td>
<td>1,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest 20%</td>
<td>2,000,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Table 15.1 gives information regarding the distribution of market income in Microland, a small nation with 100 residents.
   a. Complete the table.
   b. Based on Table 15.1, plot the Lorenz curve for this nation in Figure 15.4 (on the next page).

2. The government of Microland imposes a progressive income tax. Only those in the highest 20 percent income bracket pay the tax, and they must pay 30 percent of their income. From the tax receipts, the government gives 1/3 to the lowest 20 percent group, 1/3 to the next lowest, and 1/3 to the next lowest (the middle 20 percent group).
   a. If none of the groups in the economy alter their behavior — so that their market incomes remain the same as those in Table 15.1 — finish
Table 15.2 for the post-tax, post-transfer income distribution.

b. In Figure 15.4 draw the new Lorenz curve showing the distribution of income after the government redistribution program.

c. When is income distributed more equally: before or after the government program?

3. With the redistribution policy discussed in problem 2, what are the likely reactions of the recipients of the tax money? Of the taxpayers? How do these reactions affect your answer to part (c) of problem 2?

4. What is the difference between wealth and income? If you know one of these for an individual, can you calculate the other?

5. Jake has human capital worth $100,000 and tangible capital worth $100,000. James has only human capital worth $200,000. The return on both types of capital is 15 percent.

   a. What is Jake’s income? James’s income? Who has more income?

   b. Suppose that human capital is not measured. What is Jake’s capital? James’s capital? According to this measure, who has more capital?

   c. If income can be measured correctly, will Jake’s and James’s income or capital appear to be less equally distributed?

6. Suppose that new technology is developed that increases the demand for high-skilled workers.

   a. What is Jake’s income? James’s income? Who has more income?

   b. Suppose that human capital is not measured. What is Jake’s capital? James’s capital? According to this measure, who has more capital?

   c. If income can be measured correctly, will Jake’s and James’s income or capital appear to be less equally distributed?

In Figure 15.5 illustrate the effect the increase in demand has on the wage rate paid to high-skilled workers. If the new technology does not affect the demand for low-skilled workers, how is the relative wage rates paid high-skilled and low-skilled workers affected?

**You’re the Teacher**

1. “No citizen of the United States should be forced to live in poverty!” Comment on this assertion. Do you think attaining this goal is likely? Why or why not?
Answers

True/False Answers

Measuring Economic Inequality

1. F Income in the United States is skewed, with relatively few people earning above-average incomes and many people earning below-average incomes.

2. T The question gives the definition of the line of equality.

3. F Income is less equally distributed than the question suggests: The poorest 20 percent receive less than 5 percent of the nation’s income, and the richest 20 percent receive more than 45 percent of the nation’s income.

4. F Measured wealth, because it excludes human capital, is distributed much less equally than measured income.

5. F The closer the Lorenz curve to the line of equality, the more equal the income distribution.

6. T Income is received over a period of time and so is a flow; wealth is an amount at a point in time and so is a stock.

7. T Over people’s lifetimes, income is distributed more equally than annual income.

The Sources of Economic Inequality

8. F Human capital is people’s skills and talents.

9. T The labor demand curve is the \( MRP \) curve. Because the \( MRP \) of low-skilled workers is less than high-skilled workers, the demand for low-skilled workers is less than that for high-skilled workers.

10. T In general, people with more human capital have higher wages, so more schooling and more work experience generally lead to higher wages.

11. F There might be discrimination, but there are other possibilities, such as specialization, that can account for wage differentials.

12. F Bequests make the income distribution less equal.

Income Redistribution

13. F A progressive income tax is one whose average tax rate increases with income.

14. T Government redistribution programs increase the income of poorer households and decrease the income of richer households.

15. T The trade-off results because more redistribution, and hence more equal incomes, lessens incentives to work, thereby creating inefficiency.

Multiple Choice Answers

Measuring Economic Inequality

1. d Measured wealth is distributed much less equally than income.

2. d This answer defines the line of equality.

3. b The line of equality shows the income distribution if everyone received the same income.

4. a Follow the dotted line up from 60 percent of the households to the Lorenz curve and then left to determine that these households have about 37 percent of the nation’s total income.

5. c The farther away the Lorenz curve is from the line of equality, the less equally income is distributed.

6. d If human capital were included in the measured wealth distribution, the distribution would be more equal.

7. c Over people’s lifetimes, the degree of inequality is less than in any given year.

8. c White households have the highest average income.

9. b According to the government’s measure of poverty, 35.6 million people lived in poverty.

The Sources of Economic Inequality

10. d The vertical distance between the supply curve of high-skilled labor and of low-skilled labor equals the cost of acquiring the skill.

11. b Because the demand for high-skilled workers exceeds the demand for low-skilled, high-skilled workers have a higher wage rate.

12. d All of these factors potentially can account for wage differentials.

13. d A higher wage rate is the result of an increase in human capital, not a cause.

14. c Never-married men and never-married women have the same degree of specialization in market work and their wage rates are the same.

15. d Bequests generally make the income distribution less equal.
16. **b** Assortative mating refers to like marrying like.

**Income Redistribution**

17. **a** Government payments to the poor raise their income and reduce income inequality.

18. **c** These government programs result in income after redistribution being distributed more equally than market income.

19. **c** The big trade-off points out a cost of increasing income equality: decreasing economic efficiency.

### Answers to Short Answer Problems

#### TABLE 15.3

<table>
<thead>
<tr>
<th>Households grouped by income</th>
<th>Group income (dollars)</th>
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</tr>
<tr>
<td>Second lowest 20%</td>
<td>$300,000</td>
<td>7.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Middle 20%</td>
<td>$500,000</td>
<td>12.5%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Second highest 20%</td>
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<td>25.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Highest 20%</td>
<td>$2,000,000</td>
<td>50.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

1. **a** The answers are in Table 15.3. To calculate the answers, first obtain the total income in the nation, $4,000,000, the sum of all the groups’ incomes. The percentage earned by the second lowest 20 percent is $300,000/$4,000,000, or 7.5 percent. The cumulative percentage for the second group equals the percentage earned by it and all lower groups, which in this case is only the bottom 20 percent group. So, the cumulative percentage is 5 percent + 7.5 percent = 12.5 percent. The rest of the answers in the table are calculated similarly.

   **b** Figure 15.6 shows the Lorenz curve for Microland.

2. **a** Table 15.4 shows the income distribution after the government redistribution. The richest 20 percent of households are taxed 30 percent of their income, which equals $600,000. Their after-tax income therefore equals $1,400,000. Then, $200,000 (1/3 of the total $600,000) is given to the lowest 20 percent, so their income rises to $400,000; another $200,000 is given to the next lowest 20 percent, so their income rises to $2,000,000; and the final $500,000 is given to the middle group, so their income rises to $700,000. The percentages are calculated in the same way as in problem 1.

   **b** Figure 15.7 (on the next page) shows both Lorenz curves.

   **c** Income is distributed more equally after the government programs. The Lorenz curve for income after the government redistribution is closer to the line of equality than the Lorenz curve showing market income before the redistribution.

3. The recipients of the tax money likely will work less. If they were to work more, they might earn enough to move into a higher income bracket and lose the money the government is giving to them. The taxpayers also will tend to work less. The government
is taxing them so that they must pay 30 percent of their income as taxes. As a result, they will tend to cut back on their work because the income they get to keep for themselves from working, their after-tax income, has fallen. On both counts, people work less and so the nation’s total income decreases.

Both of these effects illustrate the force of the big trade-off. By making incomes more equal, the government program has blunted people’s incentives to work and thereby lessened economic efficiency and decreased the overall size of the nation’s income. These big trade-off effects indicate the cost to redistributing income and should play at least a minor role in your decision whether you think the income distribution before or after the redistribution is best.

4. Wealth is the stock of assets owned by an individual, whereas income is the flow of earnings received by an individual. These concepts are connected because an individual’s income is the earnings that flow from the person’s stock of wealth. If we know the person’s stock of wealth and rate of return, we can calculate his or her income flow. If we know the person’s income flow and the rate of return, we can calculate his or her stock of wealth.

5. a. Jake’s income equals the return on capital, 15 percent, times the amount of capital. Hence Jake’s income equals $30,000. James’s income equals $30,000, so the incomes are the same.

b. Jake’s capital is measured as $100,000. James’s capital is measured as $0 because human capital

is not included when capital is measured. Jake seems to have more capital.

c. Capital appears to be less equally distributed.

The two measured incomes are equal but the two measured capitals are different. This line of reasoning helps explain the difference between the measured income distribution and the measured wealth distribution in the United States.

6. The increase in the demand for high-skilled workers shifts the demand curve rightward as shown in Figure 15.8, where the shift is from $D_0$ to $D_1$. As a result, the wage rate rises from $W_0$ to $W_1$. The wage rates of low-skilled workers are not directly affected by this change, so the relative wage rate of high-skilled to low-skilled workers rises.

You’re the Teacher

1. “Oh come on, you can’t really be serious about this statement, can you? Think of the amount of redistribution it would take to insure that no one has less than the poverty-level income and then think about the idea of the big trade-off that we studied. The opportunity cost of this policy would be immense because it would really blunt people’s incentives to work — both the high-income people who would have to pay heavy taxes and the low-income people who would lose a lot of transfer payments if they earned more income. I think the big trade-off points out that this suggestion, appealing in concept, simply isn’t practical in reality.”
1. In 2000, mean (average) household income in the United States was closest to
   a. $17,000.
   b. $29,000.
   c. $57,000.
   d. $102,000.

2. In the United States, the 20 percent of families with the highest incomes receive about ____ of total income.
   a. 20 percent
   b. 35 percent
   c. 50 percent
   d. 66 percent

3. The closer the Lorenz curve for income is to the line of equality,
   a. the larger is the nation’s total income.
   b. the smaller is the nation’s total income.
   c. the more equally are incomes distributed.
   d. the larger the fraction of the nation’s income received by the richest families.

4. Which of the following makes the distribution of income more equal?
   a. Bequests
   b. Progressive income taxes
   c. Assortative mating
   d. The fact that people paid higher wage rates work more hours

5. Government tax and transfer payments generally
   a. shift the Lorenz curve toward the line of equality.
   b. shift the Lorenz curve away from the line of equality.
   c. have no effect on the Lorenz curve.
   d. shift the Lorenz curve away from the line of equality at low incomes and toward it at high incomes.

6. The big trade-off
   a. would not exist if income taxes were proportional.
   b. points out that the redistribution of income increases people’s incentives to work.
   c. says that economic efficiency is decreased as more redistribution is undertaken.
   d. says that richer families trade off more hours at work for more income.

7. The supply curve of high-skilled workers lies ____ the supply curve of low-skilled workers.
   a. above
   b. on top of
   c. below
   d. below at low wage rates and above at high wage rates

8. Over the last decade, technological change has ____ the demand for high-skilled workers and ____ the demand for low skilled workers.
   a. increased; increased
   b. increased; decreased
   c. decreased; increased
   d. decreased; decreased

9. Income is measured ____ and wealth is measured ____.
   a. at a point in time; at a point in time
   b. at a point in time; over a period of time
   c. over a period of time; at a point in time
   d. over a period of time; over a period of time

10. Because the measured distribution of wealth does not consider the role of human capital, the measured wealth distribution
    a. is more equal than measured income distributions.
    b. is less equal than measured income distributions.
    c. is more equal than actual wealth distributions.
    d. cannot be compared to the actual wealth distribution.

The answers for this Chapter Quiz are on page 368