CHAPTER 18
INCOME DISTRIBUTION AND POVERTY

Chapter in a Nutshell

One conclusion to be drawn from the preceding three chapters is that people who supply highly productive labor, capital, land, and entrepreneurial talent to the market earn higher incomes. Conversely, many people at the bottom of the income distribution are less productive and earn lower incomes as a result. The extent of inequality in the income distribution can be measured with the Lorenz curve and the Gini coefficient. The Lorenz curve measures the percentage of total income received by each quintile of the population. The Gini coefficient transforms the Lorenz curve into a single number. The diagonal of the Lorenz curve represents perfect equality in the income distribution. The right angle axes of the Lorenz curve show complete inequality in the income distribution. All income distributions lie somewhere between these extremes. The Gini coefficient is the ratio of the area between the diagonal and the Lorenz curve to the total area under the diagonal. These tools for measuring income inequality help us to trace out changes in a country’s income distribution. Over time, the income distribution in the United States has remained fairly stable. The distribution of income in the United States is similar to that in other industrialized countries. Industrialized countries tend to have income distributions that are more equal than those in the most less-developed countries. The distribution of wealth can also be studied using the Lorenz curve and the Gini coefficient. In general, wealth is distributed more unequally than is income.

It is possible to make strong arguments for both income equality and income inequality. Income equality can be justified on the randomness of personal misfortune that leads to poverty, people’s preference to avoid poverty over any other possible distribution of income, and the notion that income equality generates the maximum total utility for society. Arguments for income inequality relate high incomes to high levels of effort. Also, income inequality is more conducive to rapid economic growth that will improve circumstances for the poor over time.

Poverty can be described relatively, as a percentage of median income, or in absolute terms, as a minimally acceptable physical standard of living. The greatest progress against poverty in the United States occurred during the 1960s. Rates of poverty have remained fairly constant since then. There are a number of ways to fight poverty, including cash and in-kind assistance provided by the government and a negative income tax. In the final analysis, however, the one sure way to beat poverty is to enable people to become more productive.

After studying this chapter, you should be able to:

- Explain the reasons for inequality in the distribution of income.
- Measure a country’s income distribution using a Lorenz curve or a Gini coefficient.
- Discuss differences in income distributions among industrialized and less-developed countries.
- Describe changes in income inequality over time in the United States.
- Contrast inequality in the distribution of income with inequality in the distribution of wealth.
- Discuss the advantages of inequality and equality in the distribution of income and wealth.
- Compare relative and absolute definitions of poverty.
- Describe methods for dealing with poverty.
Concept Check — See how you do on these multiple-choice questions.

What is a Lorenz curve intended to measure?

1. The Lorenz curve is a representation of
   a. a Rawlsian “society in the making”
   b. a perfectly equal distribution of income
   c. a perfectly equal distribution of wealth
   d. the percentage of total income earned by each quintile of the population
   e. the percentage of poor people in a country

Income is the amount a person earns in a year. How does one accumulate wealth?

2. The basic difference between income and wealth is that
   a. wealth is distributed more equally than income
   b. the rich have much wealth but little income, while the opposite is true for the poor
   c. wealth reflects the accumulated assets of a lifetime and income is what is earned in one year
   d. income grows faster than wealth
   e. wealth grows faster than income

The median income is the income in the precise middle of the income distribution. Why would someone studying poverty find this statistic especially useful?

3. One way to define poverty is to arbitrarily select some percentage of the population’s median income as
   a. the poverty threshold
   b. the fund for the poor
   c. necessary for in-kind assistance
   d. the minimal acceptable physical standard of living
   e. the definition of middle class

What is the difference between cash assistance and in-kind assistance?

4. Examples of in-kind assistance include all of the following except
   a. food stamps
   b. medical care
   c. Supplemental Security Income
   d. housing benefits
   e. Pell grants

What is the basic reason for poverty?

5. Although a negative income tax can bring a family up to a threshold level of income, it cannot immediately
   a. solve the problem of making the poor more productive
   b. eliminate other poverty programs
   c. provide the poor with the same cash assistance that Supplemental Security Income does
   d. replace in-kind assistance
   e. reduce the Gini coefficient
Am I on the Right Track?

Your answers to the questions above should be d, c, a, c, and a. Measuring the extent of income inequality in a country is conceptually fairly simple. However, doing it in practice presents enormous challenges for economists. For example, accounting for the impact of government programs on the income distribution is a difficult problem to solve. The truly vexing question for economists and other social scientists who work on the problem of poverty is how to reduce levels of poverty in the long run. This requires raising the productivity levels of impoverished households.

Key Terms Quiz — Match the terms on the left with the definitions in the column on the right.

1. Lorenz curve ______ a. government assistance in the form of direct goods and services
2. cash assistance ______ b. the midpoint of a society’s income distribution
3. Gini coefficient ______ c. cash payments to the poor that decrease as income increases — an income tax in reverse
4. in-kind assistance ______ d. a curve depicting an economy’s income distribution
5. wealth ______ e. the accumulated assets of individuals
6. life-cycle wealth ______ f. numerical measure of the degree of income inequality in an economy
7. median income ______ g. the level of income below which families are considered poor
8. poverty threshold ______ h. government assistance in the form of cash
9. negative income tax ______ i. wealth in the form of nonmonetary assets like a house, automobiles, and personal clothing

Graphing Tutorial

The Lorenz curve is a convenient way to portray the distribution of income in an economy. As with the other graphs we have studied, it is critical to know what variable is measured on which axis when constructing a Lorenz curve. The percentage of population is measured along the horizontal axis, and the percentage of total income the population receives is measured along the vertical axis. Typically, a Lorenz curve displays the cumulative population quintile shares of total income. Consider the following table that shows the population quintile shares of income received in the Yellow Springs economy.

<table>
<thead>
<tr>
<th>Population Quintile</th>
<th>Percentage of Total Income Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest</td>
<td>12</td>
</tr>
<tr>
<td>Second</td>
<td>16</td>
</tr>
<tr>
<td>Third</td>
<td>20</td>
</tr>
<tr>
<td>Fourth</td>
<td>24</td>
</tr>
<tr>
<td>Richest</td>
<td>28</td>
</tr>
</tbody>
</table>

If income were distributed perfectly equally in Yellow Springs, each 20 percent of the population would receive 20 percent of the total income. Clearly, there is income inequality in Yellow Springs. The poorest 20 percent of the income distribution receives only 12 percent of the total income, while the richest 20 percent receives 28 percent of the total income. In order to construct the Lorenz curve for these data, we need to add up the quintile shares to arrive at the cumulative quintile shares. The cumulative quintile share for the poorest 20 percent of the population is 12 percent. For the bottom 40 percent of the population, the cumulative quintile share is 12 percent plus 16 percent, or 28 percent of total income. The bottom 60 percent
of the population receives a cumulative percentage of total income equal to 48 percent, the bottom 80 percent receives 72 percent of total income, and the percentages all add up to 100 percent. These cumulative quintile shares are plotted in the graph shown below.

The Lorenz curve for Yellow Springs lies below the diagonal that represents perfect income equality. Along the diagonal, each 20 percent of the population receives 20 percent of the total income. Along the Yellow Springs curve, the poorest 20 percent receives only 12 percent of the total income while the richest 20 percent receives 28 percent of the total income. Perfect income inequality would be represented by the right angle axes marked by arrows. An income distribution with perfect income inequality would have one person receiving all the income in the economy.

Another measure that is used to describe an economy’s income distribution is the Gini coefficient. The Gini coefficient is the ratio of the area between the diagonal and the Lorenz curve to the total area beneath the diagonal. The Yellow Springs Lorenz curve is shown below with areas produced by the Lorenz curve labeled A and B, respectively. The Gini coefficient, G, is calculated as $G = A/(A + B)$. 
An economy with a perfectly equal income distribution will have a Gini coefficient equal to zero since the area labeled A would be absent. What about the perfect income inequality distribution shown in the first graph? The Gini coefficient for perfect income inequality is 1 because the area labeled A would occupy the whole space under the diagonal.

The closer the Lorenz curve is to the diagonal, the more equal the income distribution and the lower the Gini coefficient. Drawn below is a Lorenz curve representing the income distribution for the Xenia economy, which displays greater inequality than the Lorenz curve for Yellow Springs.

Clearly, the Lorenz curve for Xenia is farther from the diagonal than the one drawn for Yellow Springs. If we were to compute the Gini coefficient for Xenia, it would be larger than the Yellow Springs Gini because a larger area lies between the diagonal and the Lorenz curve in Xenia’s case.

**Graphing Pitfalls**

The greatest potential pitfall you will encounter with Lorenz curves is graphing the data on the wrong axes. Suppose you make a mistake and plot the income data horizontally and the population data vertically. What sort of Lorenz curve would you get? Using data from the Xenia Lorenz curve drawn above, a Lorenz curve with income measured horizontally and population measured vertically is shown on the following page. You’ll get a Lorenz curve that lies above the diagonal instead of below it. If you interpret this graph properly, it gives the same information as the graph shown above. However, it is more difficult to compare with other Lorenz curves that are drawn in the usual way. So, if you draw a Lorenz curve and it lies above the diagonal, you’ll know you have your axes switched.
A Lorenz curve drawn with the axes switched will lie above the diagonal instead of below the diagonal. If this happens, simply redraw the curve with the axes labeled properly.

**True-False Questions** — If a statement is false, explain why.

1. Plato thought that, in order to minimize political discontent, the income of the richest citizen should be no greater than five times the income of the poorest. (T/F)

2. There is little connection between a person's productivity and his/her income level. (T/F)

3. People's occupations typically signal where they rank in the income scale. (T/F)

4. The Lorenz curve that consists of the right angle axes represents perfect income equality. (T/F)

5. The distribution of income is more equal in the United States than in Sweden and is reflected by a Lorenz curve that is closer from the diagonal than is Sweden's. (T/F)

6. The Gini coefficient is the ratio of the area between the diagonal and the Lorenz curve and the total area beneath the diagonal. (T/F)

7. A decrease in the Gini coefficient indicates a move toward greater income equality. (T/F)
8. The United States' income distribution fluctuates dramatically from year to year. (T/F)

9. Less-developed countries typically have income distributions that are more equal than do developed countries. (T/F)

10. Life-cycle wealth is common to nearly all income groups, while other wealth forms are more concentrated among the highest income groups. (T/F)

11. Wealth in the United States at the time of the American Revolution was distributed quite equally. (T/F)

12. People who believe that personal misfortune largely explains why people are poor are more likely to favor a more equal income distribution. (T/F)

13. Rawls's theory of justice suggests that people would prefer a more equal income distribution to the possibility of being at the bottom of an unequal income distribution. (T/F)

14. Assuming that everyone had the same utility functions for money, income equality would generate the highest level of total utility in society. (T/F)

15. The poverty threshold can be defined in relative terms as a certain percentage of the population’s median income. (T/F)

Multiple-Choice Questions

1. Plato and Aristotle expressed the view that income inequality should be
   a. eliminated entirely
   b. encouraged because it is the source of prosperity
   c. limited to an acceptable degree
   d. what the labor market generates
   e. promoted because class differences are natural and should be reflected in income inequality

2. Wage earners
   a. are among the very poor in society
   b. usually have multiple sources of income
   c. move into upper-income brackets as their wage rates increase over time
   d. have little hope of ever seeing improvement in their lot
   e. are usually poorer than those with other primary income sources
3. An income distribution becomes more unequal as the 
   a. Lorenz curve moves toward the diagonal 
   b. Gini coefficient approaches zero 
   c. Lorenz curve moves toward the bottom right corner of the diagram 
   d. Gini coefficient approaches 0.5 
   e. Lorenz curve lies between the diagonal and the bottom right corner of the diagram

4. The Gini coefficient is 
   a. the area between the diagonal and the Lorenz curve divided by the area under the diagonal 
   b. the area under the diagonal divided by the area between the Lorenz curve and the diagonal 
   c. a measure of people's wealth 
   d. the difference between the highest 20 percent of income earners and the lowest 20 percent 
   e. the ratio between the highest 20 percent of income earners and the lowest 20 percent

5. When the Gini coefficient increases, 
   a. income inequality increases 
   b. income equality increases 
   c. the slope of the Lorenz curve decreases 
   d. the slope of the Lorenz curve increases 
   e. everyone is made better off

6. The income distribution in the United States has ______ in the last 15 years. 
   a. become more unequal 
   b. become less unequal 
   c. been shifted to favor low-income households 
   d. remained constant from year-to-year 
   e. become too difficult to measure

7. Comparing income distributions between countries is ________ because each includes different systems of taxes and cash payments by governments to individuals. 
   a. complicated 
   b. irrelevant 
   c. impossible 
   d. straightforward 
   e. unfair

8. All of the following are reasons for the greater inequality in the income distribution in less-developed countries except 
   a. low marginal revenue products of labor 
   b. the agricultural character of production 
   c. a definition of the poverty threshold that include 50 percent of the households 
   d. a limited range of employment opportunities 
   e. low levels of educational attainment among most of the population

9. Between 1774 and 1973, the distribution of wealth in the United States became 
   a. slightly more equal as measured by the Gini coefficient 
   b. slightly more unequal as measured by the Gini coefficient 
   c. perfectly unequal 
   d. perfectly equal 
   e. more equal due to the progressive income tax
10. According to John Rawls, if their own income status in society was uncertain, most people would choose
   ________________.
   a. more income equality, being frightened by the possibility of being among the poor
   b. less income equality, being attracted by the possibility of “making it big”
   c. to let the market dictate who gets what because they view the market as unbiased
   d. to eliminate inheritance taxes because they create unnatural inequality
   e. to have government subsidize basic needs because they think that would be fair

11. Many socialists, especially Marxists, believe that income inequality arises principally from
   a. the unequal distribution of human skills
   b. unequal access to education
   c. differences in effort among individuals
   d. discrimination
   e. the unequal distribution of property

12. Lerner’s argument that income equality tends to maximize utility in a society is based on the assumption that
   a. there are no interpersonal comparisons of utility
   b. everyone's utility function is unique
   c. everyone's utility function is the same
   d. there is increasing marginal utility of income
   e. there is decreasing marginal utility of income

13. Advocates for equality in the income distribution emphasize all of the following except
   a. the randomness of personal misfortune
   b. the strong desire people have to avoid being in the lowest-income categories
   c. unequal distribution of income created by the unequal distribution of wealth
   d. an equal distribution of income maximizes society's utility
   e. greater income equality decreases efficiency

14. If government programs to assist the poor are successful at equalizing the income distribution, then the
   Lorenz curve should shift ________________ and the Gini coefficient should ________________.
   a. toward the diagonal; decrease
   b. away from the diagonal; increase
   c. toward the diagonal; increase
   d. away from the diagonal; decrease
   e. to a straight line; increase

15. In the period since 1960, the most progress in reducing the percentage of the population living in poverty has occurred between
   a. 1960 and 1970
   b. 1970 and 1980
   c. 1980 and 1990
   d. 1960 and 1980
   e. 1970 and 1990
16. Food stamps are a good example of a type of program that provides
   a. cash assistance
   b. in-kind assistance
   c. the possibility of improved skills and a better job
   d. enough aid to go above the poverty threshold
   e. food subsidies to everyone below the median income

17. One advantage to the negative income tax as an anti-poverty policy is that it gives the poor
   a. a guaranteed income that is higher than under current poverty programs
   b. a clear way out of poverty
   c. a variety of in-kind benefits
   d. the opportunity to pay in taxes for some of the benefits they receive
   e. incentive to work since the more income they earn, the more they can keep

18. One drawback of the negative income tax is that it
   a. does not bring the incomes of the poor up to the threshold poverty level
   b. does not address the problem of low productivity among the poor
   c. is ethically inappropriate to tax the incomes of the very poor
   d. creates a negative stigma for those who receive it
   e. is contrary to Rawls’s theory of justice

19. Examining the Gini coefficient for the United States from 1970 to 2004 shows that
   a. income inequality decreased from 1970 to 1980 and then increased slightly from 1980 to 2004
   b. income inequality decreased gradually over the whole period
   c. income inequality increased slightly from 1970 to 1980, then increased more sharply from 1980 to 2004
   d. there is little evidence of a trend that can be discerned from the data
   e. income inequality decreased sharply over the whole period

20. A winner-take-all market is one in which
   a. top performers are paid far more than others who are slightly less talented
   b. income equality is the goal
   c. a dominant firm, or godfather, sets price for other firms
   d. wages rates are carefully regulated instead of being set by market forces
   e. wage-related rents would rarely be apparent

The following questions relate to the theoretical, global, historical, and applied perspectives in the text.

21. The poems “The Deserted Village” and “The Village” depict an economic transformation in England that
   a. caused peasants to move from the village to the city and vastly improve their living standards
   b. caused peasants to move from an idyllic existence of relative plenty in “The Deserted Village,”
   however, in “The Village,” life is depicted as far from idyllic for peasants in either the countryside or the city
   c. caused peasants to move from an idyllic existence of relative plenty in “The Village,” however, in “The Deserted Village,” life is depicted as far from idyllic for peasants in either the countryside or the city
   d. forced villagers to lead transient lives as migrant workers
   e. caused peasants to move to the city where there incomes did not increase but the quality of life improved
22. In a “winner take all” culture, income inequality is
   a. decreased because the superstars who earn high salaries typically share their earning with co-workers
   b. decreased because the superstars earn recognition rather than higher incomes
   c. increased because the superstars receive high salaries drawn from a fixed salary pool
   d. increased because the superstars are not much more talented than their competitors
   e. decreased because those competing with the superstars become more productive and earn higher incomes as a result

23. If inequality in the distributions of income and wealth are the result of pure luck (or acts of Nature), then
   a. striving for social justice will be a ceaseless task since luck continually redistributes income and wealth
   b. it is essential for the rich to give to the poor
   c. a market economy based on voluntary exchanges should be abandoned
   d. the rich and the poor earn the incomes they deserve
   e. the poor are responsible for their plight

24. Recent research that examines how long it takes for the poor to move out of poverty shows that
   a. to a greater extent than in Europe, poor people in the United States move out of poverty more rapidly due to flexible labor markets in the U.S.
   b. the rates at which people move out of poverty are roughly equal for industrialized countries
   c. few people in any industrialized countries are able to move out of poverty in just one year
   d. job re-training is more effective in the United States than in European countries, hence people stay poor for a shorter period of time
   e. a much smaller percentage of the poor in the United States are able to move out of poverty in a year than in European countries

25. David Ricardo expressed views regarding the efficacy of the poor laws (Great Britain’s system of welfare for the poor in the nineteenth century) wherein he supported
   a. an increase in government aid to the poor
   b. a gradual decrease in aid to the poor
   c. efforts by the British government to teach the poor to be more responsible
   d. direct cash payments to the poor rather than in-kind assistance
   e. in-kind assistance to the poor rather than direct cash payments

26. Because science has made it possible for the elderly to live longer, they are becoming a larger share of the population, which will likely result in
   a. the privatization of health care services since taxpayers cannot afford to pay more
   b. more expansive government provision of health care services to the elderly paid for by higher taxes
   c. a decrease in health care costs since anti-aging medical breakthroughs have been so promising
   d. an increased financial burden for health care shared by the elderly, their families, and taxpayers
   e. efforts to restrict access to limited health care resources by the elderly

Fill in the Blanks

1. People’s incomes are derived from _____________, ________________, ________________, and ________________, or combinations of them.

2. The Gini coefficient is computed by dividing the area between the ________________ and
3. Income inequality tends to be higher in __________ economies than in __________ economies.

4. Poverty can be described in ________________, such as a percentage of median incomes, or in ________________, such as a minimally acceptable physical standard of living.

5. A ______________ transfers income to people whose pre-tax income is below a specific level, without creating ________________ that are sometimes associated with government assistance.

**Discussion Questions**

1. Critique the following statement: "A sure way to eliminate poverty is simply to tax all income above $100,000 at a 100 percent rate and transfer the revenue to the poor."

2. Why is it important to determine whether a country's Lorenz curve is drawn before or after taxes are taken out of incomes and government-paid supplements are added back into incomes?

3. Why are income distributions so much more unequal in the less-developed world than in the industrialized world?

4. John Rawls describes a system whereby people who have no foreknowledge about their place in an income distribution will prefer a distribution of income that is more equal. Why do you think this is true? Consider Exhibit 6 in the text, which compares quintile shares of income between countries. Without foreknowledge of your place in the income distribution, in which of these countries would you choose to live? Is your choice consistent with Rawls' prediction?

5. How is poverty defined? How many people live in poverty now, and how has that figure changed since 1960? Why has progress in lowering the poverty rate been so slow since 1970?

6. Discuss the advantages and drawbacks of a negative income tax as a means to cope with poverty compared to in-kind assistance and cash assistance.

**Problems**

1. Complete the table on the following page for a negative income tax, assuming that the tax rate is 20 percent and the minimum income level is $8,000.
2. Suppose an economy consists of five people whose combined income is $200,000. Their individual incomes are as follows: Bob Rueppel, $85,000; Carol Young, $70,000; Fred Tiffany, $15,000; Larry Gwinn, $15,000, and Linda Lewis, $15,000. Draw a Lorenz curve that represents their economy’s income distribution using the axes provided below.

3. Suppose the poverty threshold is defined as 50 percent of the economy’s median income. Does anyone fall below the poverty threshold in Problem 2 above? Explain.

**Everyday Applications**

The trend of public policy toward the poor in recent years has been toward less automatic income redistribution and more emphasis on supporting efforts by the poor to gain skills through education and retraining that might help them to compete successfully in the job market. How do you feel about such a shift in policy? What if the policy results in greater income inequality over time even when taxes and income redistribution are considered? Would it still be an acceptable change in public policy to you? What would be the costs and benefits associated with greater income inequality compared to those associated with greater income equality?
For information about how African Americans as a group have increased their productivity and experienced economic improvement, visit the Web site of the National Council on Economic Education (http://www.ncee.net). Once you are there, type Martin Luther King, Jr. into the search box that will take you to a variety of lessons related to African American economic performance.

Answers to Questions

Key Terms Quiz

a. 4  
f. 3 

b. 7  
g. 8 

c. 9  
h. 2 

d. 1  
i. 6 

e. 5

True-False Questions

1. True
2. False. People who are highly productive typically earn higher wages.
3. True
4. False. The diagonal represents perfect equality in the income distribution.
5. False. Income is distributed more equally in Sweden than in the United States. The Lorenz curve for the United States is located further from the diagonal than is Sweden’s.
6. True
7. True
8. False. The quintile shares in income have stayed fairly constant over time.
9. False. Less-developed countries have greater income inequality due to the predominance of agriculture and limited employment opportunities.
10. True
11. False. The data show significant inequality in the wealth distribution two centuries ago, similar to the distribution of wealth today.
12. True
13. True
14. True
15. True

Multiple-Choice Questions

1. c  
6. a  
11. e  
16. b  
21. b  
26. d

2. e  
7. a  
12. c  
17. e  
22. c

3. c  
8. c  
13. e  
18. b  
23. a

4. a  
9. b  
14. a  
19. c  
24. e

5. a  
10. a  
15. a  
20. a  
25. b

Fill in the Blanks

1. wages; interest; rent; profit
2. diagonal; Lorenz curve; diagonal
3. less-developed; advanced industrial
4. relative terms; absolute terms
5. negative income tax; disincentives to work

Discussion Questions

1. This system is unlikely to work for the long run because it will create disincentives for people to earn incomes above $100,000. Why earn the additional income if it will all be taxed away? Moreover, the richest people in the income distribution do most of the saving. If there are fewer wealthy individuals, savings in the economy will be lower and so will investment in new capital equipment. The economy will grow more slowly as a result and may cause the poor to be in worse condition than if the income distribution had been somewhat unequal but with higher levels of investment and growth. This argument supports the existence of inequality in the income distribution.

2. Typically, if the Lorenz curve is drawn after taxes are taken out and government-paid supplements are added back into incomes, then it will likely shift closer to the diagonal. It will reflect greater income equality when compared to the Lorenz curve that is drawn to reflect only the distribution of payments to factors of production. Taxes and government-paid income supplements tend to equalize the income distribution somewhat.

3. People in less-developed countries have fewer job opportunities available to them, and those that are available are typically low-productivity, low-wage jobs. More limited access to education and training and to financial capital make it more difficult for people in less-developed countries to raise their marginal revenue products. Also, many less-developed countries are dependent on exports of agricultural goods and raw materials whose prices are quite volatile in world markets. Therefore, incomes in less-developed countries can fluctuate drastically at times.

4. It may be that people are simply averse to risk. The dread of being impoverished causes us to prefer a social structure that limits extremes in the distribution of income. Would you prefer the Netherlands as a place to live if you had no idea where you would stand in the income distribution scale? The Netherlands has the most equal income distribution as measured by the Gini coefficient. Rawls would have predicted you would choose the Netherlands.

5. Poverty can be defined as the failure to achieve a threshold level of income, expressed perhaps as a percentage of the median income, or it can be defined as the failure to meet basic needs for people. The percentage of the population living in poverty in the United States fell from 22.6 percent of the population in 1960 to 12.6 percent of the population in 1970. The percentage of people living in poverty in 1995 was 13.8. Ultimately, the cause of poverty is low productivity. The persistence of the poverty rate since 1970 may be attributable to difficulty in raising productivity levels among the poorest members of society. Clearly, the antipoverty programs introduced in the 1960s have not been completely successful at eliminating poverty.

6. The advantage to a negative income tax is that people who are poor have an incentive to work under the scheme since the more money they earn, the more money they keep. Rather than being disqualified for benefits at a fixed level of income, the negative tax received by the poor is gradually phased out as independent income increases. The negative income tax should be simpler to administer than the many programs for the poor that currently exist. Whether it would be more effective than current programs is the topic of an intense and long-running debate about how best to cope with poverty.
Problems

1. To calculate the after-tax income, take the independent income and multiply by .2 to get the tax bill. Subtract the 20 percent tax from the income level, then add the $8,000 minimum income level to get the after-tax income. The net negative or positive tax is equal to -$8,000 (the negative income tax) plus the tax bill. The completed table is presented below.

<table>
<thead>
<tr>
<th>Independent Income</th>
<th>Net Negative [-] or Positive [+] Tax</th>
<th>After-Tax Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 0</td>
<td>-$8,000</td>
<td>$ 8,000</td>
</tr>
<tr>
<td>5,000</td>
<td>-7,000</td>
<td>12,000</td>
</tr>
<tr>
<td>10,000</td>
<td>-6,000</td>
<td>16,000</td>
</tr>
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<td>20,000</td>
<td>-4,000</td>
<td>24,000</td>
</tr>
<tr>
<td>25,000</td>
<td>-3,000</td>
<td>28,000</td>
</tr>
<tr>
<td>30,000</td>
<td>-2,000</td>
<td>32,000</td>
</tr>
<tr>
<td>35,000</td>
<td>-1,000</td>
<td>36,000</td>
</tr>
<tr>
<td>40,000</td>
<td>0</td>
<td>40,000</td>
</tr>
<tr>
<td>45,000</td>
<td>+1,000</td>
<td>44,000</td>
</tr>
</tbody>
</table>

2. The Lorenz curve is shown in the graph below. The Lorenz curve is based on the data in the table below.

<table>
<thead>
<tr>
<th>Percentage of Population</th>
<th>Percentage of Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>7.5</td>
</tr>
<tr>
<td>40</td>
<td>15.0</td>
</tr>
<tr>
<td>60</td>
<td>22.5</td>
</tr>
<tr>
<td>80</td>
<td>57.5</td>
</tr>
<tr>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

3. No one falls below the poverty line. In this example, the median income is $15,000. Fred, Larry, and Linda all make $15,000, so no one falls below $7,500, which is 50 percent of the median income.
Homework Questions

True-False Questions — If a statement is false, explain why.

1. A perfectly equal distribution of income in an economy will have a Lorenz curve that is the same as the diagonal. (T/F)

2. The degree of income inequality increases as the Gini coefficient approaches one. (T/F)

3. Income inequality in the United States increased significantly during the 1990s. (T/F)

4. Perfect equality in the income distribution maximizes utility for society regardless of individual utility functions for money. (T/F)

5. The largest single expenditure item by government to combat poverty is job training. (T/F)

Multiple-Choice Questions

1. A society with a relatively equal distribution of income is characterized by
   a. a Lorenz curve that is close to the bottom and right sides of the diagram
   b. a Gini coefficient that is close to one
   c. limited government intervention in the economy
   d. limited access to education for most households
   e. a Lorenz curve that is close to the diagonal

2. The assets that people accumulate over their lifetime and, perhaps, other lifetimes reflects their
   a. income
   b. ability to invest wisely in financial markets
   c. level of education
   d. net wealth
   e. contribution to the economy

3. Because people respond to monetary incentives to work and invest, which leads to faster economic growth, it is reasonable to argue that
   a. unearned income (i.e., income from financial assets) should be taxed at a high rate
   b. some degree of income inequality may be beneficial
   c. greater equality in the income distribution will accelerate economic growth
   d. wealthy countries must maintain an unequal income distribution in order to stay wealthy
   e. taxes on income and wealth should be abolished
4. The negative income tax is a method for reducing poverty that focuses on
   a. in-kind assistance to the poor
   b. cash payments to the poor that decrease as their income increases
   c. making certain that the basic needs of the poor are met
   d. increasing the marginal revenue product of labor for poor people
   e. careful administration of poverty programs to make sure that poor people spend their cash assistance wisely

5. John Rawls’s theory of justice suggests that most people, when placed in a society “in the making,” will prefer
   a. a highly unequal distribution of income
   b. a set of rules for production and distribution that allow only a small minority to succeed
   c. a society that only modestly compensates those who suffer personal misfortune
   d. a society with greater income equality
   e. a society where people have abandoned the pursuit of self interest

**Discussion Questions/Problems**

1. Construct a Lorenz curve for the following economy of five individuals.

<table>
<thead>
<tr>
<th>Name</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Agna</td>
<td>$80,000</td>
</tr>
<tr>
<td>David Nibert</td>
<td>75,000</td>
</tr>
<tr>
<td>Jo Wilson</td>
<td>20,000</td>
</tr>
<tr>
<td>Marcia Frost</td>
<td>12,500</td>
</tr>
<tr>
<td>Robin Inboden</td>
<td>12,500</td>
</tr>
</tbody>
</table>

2. What would society gain from greater equality in the income distribution? What would it lose?